COMPUTERWORLD

TOP OF THE NEWS

IBM's 20-year pact with Hogan Systems, Inc. could alter the shape of the banking software market. **Page 146.**

Micrographics still draws a crowd, despite the increasing presence of optical storage. **Page 2.**

Canaan Computer Corp. will sell its department systems through IBM's former leading value-added reseller. **Page 6.**

Software AG of North America rolls out support for IBM's SQL. **Page 15.**

Novell, Inc.'s direct sales efforts have some of its top customers worried. **Page 45.**

The vintage-1971 Kenbak-1 is designated the earliest commercial microcomputer. **Page 33.**

MIS and vendors of latest generation high-end computers are not speaking the same language. **Page 26.**

IBM System/38 users have been expecting a new high-end system for many months, with some observers predicting a third-quarter 1986 introduction. But announcement of what has been known unofficially as the Model 60 may come much sooner — tomorrow, according to some IBM watchers. In addition to the Model 60, IBM is rumored to be introducing enhanced versions of low-end System/38s and a high-density replacement for the 3370 disk drive, which would be welcomed by selected System/38 users who are running disk-intensive operations and have outgrown the 571M-byte 3370.

Hewlett-Packard later this month is expected to introduce support for Unix on its Spectrum machines, the HP Series 3000 Models 930 and 950. In June, HP is expected to announce several offerings in its line of computer-aided engineering software.

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Users await protocol fixes

Evolving MAP/TOP specs confront joint users group

By Elisabeth Horwitt

SEATTLE — Despite reported progress toward inside Manufacturing Automation Protocol and Technical Office Protocol specifications and products, some attendees at the MAP/TOP Users' Group Meeting held last week expressed caution about committing themselves to the still-evolving protocols.

Charles Gardner, chairman of the MAP/TOP Steering Committee, assured an audience of more than 500 attendees that "we're moving from the awareness to the conviction stage." But he admitted that there was still the "difficult issue" of how

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Merger battle may lose buyers

By Alan Alper

NEW YORK — A protracted hostile attempt by Burroughs Corp. to acquire Sperry Corp. could force prospective customers directly into IBM's embrace and could seriously damage both firms' long-term fiscal solvency, industry observers contended last week.

That analysis emerged as Sperry, after nine days of silence, rejected Burroughs' $70-a-share acquisition proposal, claiming the merger was not in its shareholders' or customers' best interests. Sperry made a conditional offer to repurchase the remaining 29.5 million outstanding shares at

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FCC move eases service restrictions

By Mitch Betts

WASHINGTON, D.C. — The Federal Communications Commission last week dropped regulations that required AT&T and the seven regional holding companies to offer enhanced services through separate subsidiaries.

In its so-called Third Computer Inquiry ruling, the FCC eliminated a 1980 policy requiring separate subsidiaries to market offerings of computerized communications services, such as packet switching and voice mail.

Although the action was seen as a major step toward further telecommunications deregulation, no flood of new services is expected soon as a result of the FCC decision. The regional holding companies still must obtain waivers from U.S. District Court Judge Harold H. Greene, who oversees the AT&T divestiture agreement, in order to offer certain information services, agency officials noted.

Many business communications managers supported the move to kill the separate subsidiary rule, provided that strict accounting rules and other safeguards are established to protect users' interests.

"Structural separation has created disincentives for technological innovation and has denied users a single point of interface for systems solutions," said a spokesman for the Association of Data Communications Users, based in Bloomington, Minn.

"This is one small step in the right direction," said Robert Ellis, president of the Aries Group, Inc., a Rockville, Md.-based consulting firm specializing in voice and data networks. "Anything that gets rid of that artificial separation has to be in the interest of the end user," he said.

Edwin B. Spievack, president of

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CW EXCLUSIVE

Beyond commodity: IBM's top PC executive talks strategy

By Eric Bender

Standing against the tide of inexpensive clones, IBM will price aggressively against contenders in the low-end personal computer market, Entry Systems Division President William Lowe declared last week.

But Lowe insisted that corporate America's micro buyers should look beyond pricing if they want to take advantage of communications features now or advanced technology features now on the horizon.

The attack of the bargain-basement clones is just the latest challenge to IBM's Personal Computer sales, but the Big Blue juggernaut continues to roll. By Dataquest, Inc. estimates, more than 2.5 million standard PCs will ship this year.

In 1980, Lowe, then head of an IBM laboratory in Boca Raton, Fla., gave the late Philip Estridge the go-ahead to create the PC. During the next few years, as Lowe took a series of high-level executive jobs elsewhere at IBM, the PC project skyrocketed from a handful of people into a mighty IBM division with 10,000 employees.

Lowe, 45, who joined IBM in 1962 as a test engineer, returned to head ESD in March 1985. Interviewed last week at the division's headquarters, he outlined some plans for the Personal Computer's future in large corporations.

Lowe

CW: You've been saying that PCs are not really a commodity business. Why not?

LOWE: Well, computers are programmable. Technology is really exploding as fast now, and over the next five to 10 years, as it had been in the past.

I see us providing more function and more applications in the machines than many 990-plus advanced technology as we go through time.

The PC is a moving machine. It's not a static design point, and I think the new functions and features we'll be providing will be attractive to a lot of people.

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NEWSPAPER

NEWS

Knowledge workers' changing needs affect MIS, exec says

By Peggy Watt

SAN FRANCISCO — Today's "knowledge workers" represent a new majority of U.S. workers whose changing needs are forcing traditional MIS to loosen its control over corporate information resources, an executive of a leading information services company said last week.

Robert E. Weissman, president and chief operating officer of Dun & Bradstreet Corp., speaking at a conference of the Association for Information and Image Management, said end users are dramatically altering the role of MIS.

"There is an information revolution going on, with end users wrestling control from the traditional wielders of power," Weissman said.

Data access on more desktops, since the proliferation of personal computers as well as an information explosion assisted by more accessible mass storage, is spurring the savvy workers, according to Weissman. "bringing forth promises of our new information age."

In the case of Dun & Bradstreet, which has been described as the largest information industry firm in the world, the focus is still on the task, not the tool, Weissman said.

"We don't think of ourselves as being in the information market," he said. "We define a market as having commercial commodities, cost structures and customers. I've never taken a company to lunch." The market is the people whose needs Dun & Brad-

street meets, he said.

That approach and the use of personal computers and, generally, wide data access in meeting those needs has enabled Dun & Bradstreet to double revenue and triple profits in the past five years, Weissman said.

He added in a later interview that MIS managers need to adapt accordingly. "MIS managers are an endangered species if they don't realize the definition of the critical leverage point has changed," Weissman said. "The largest, most expensive, least understood part of the equation [no meet a user's need] is the CPU."

Just as the computer is learning to focus not on data for sale, but on the customer problem to be solved, the MIS department needs to deal with issues before systems, he added.

In fact, Dun & Bradstreet has never had an MIS director, he said. Computers as a means of providing customer and user services "are so ground into the infrastructure of the business that [computer use] grew up spontaneously," he said.

He expects similar philosophies in firms that emphasize problem solving. "The productivity of machines is no longer as important as the productivity of people," he added. "The MIS manager shouldn't allow himself to be measured in computing capacity but on whether the system is responsive to the needs of the users. That's still not believed by some. And their success in that area is restricted to the extent that they resist it."

Microfilm alive, well at show

Lack of standards slows adoption of disk storage

SAN FRANCISCO — Optical disk storage manufacturers were out in force for the annual Association for Information and Image Management show last week, but efficient, fast and relatively cheap micrographics techniques still drew the crowds.

"I've been hearing . . . micrographics or microfilm is dead. It's passe. The technology is old — the wave of the future is optical disk," said Donald M. Frey, Bell & Howell Co. board chairman and chief executive officer, in his opening address. "But what we are now into is the latest of a long list of post-World War II technical hypes."

Despite the rapidly developing new methods of electronic storage, paper still accounted for 95% of document management in 1986, he added. Microfilm handled 5% of the load, and electronic media accounted for 1%.

The show's nearly 10,000 attendees, while jostling for a look at the latest optical disk jukeboxes and aperture card printers, tended to concur that they were not abandoning microfilm or paper just yet.

"I haven't determined whether optical disks are archival enough" and whether they will simply last as long as microfilm is known to endure, said

Milton Matzke, a branch manager for state library records in Frankfort, Ky. "I wish they'd come out with some standards."

Campion G. Jaques, a sales representative for Chicago-based Endata, Inc., publisher of parts and equipment catalogs for a variety of fields, said he was eyeing optical disks as another medium on which to present inventory and price listings.

"It's interesting to see how everyone's direction has changed to accept new technology," he said, recalling that early Computer Output Manager recorders were "ostracized" at their first appearance. He already produces catalogs on floppy disks, but the differences between formats only complicate that additional medium, he said.

"But I see optical disks being involved at some time," he added. "I hope it will be compatible, economical, and I'll be able to supply it."

Micrographics' longevity ensures its place in storage technology, said Harry J. Siegel, director of document and publication services for AM Pipeline Co. in Detroit.

"We have fiche, film and paper," Siegel said. "I think there'll always be a combination. I don't see micrographics going away." But he said he would put optical disks to use for instantaneous retrieval, while keeping the film for archived copies that need to be read less frequently.

— Peggy Watt

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DEPARTMENTS

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NEWS

Merger battle may lose users

$80 a share if Burroughs' cash tender offer for 33 million shares is successful [CW, May 12].

Martin Litsky, president of the Sperry users group UIS, suggested that a drawn-out hostile takeover attempt by Burroughs of Sperry could hinder both firms' efforts to expand their user bases. The primary concern, Litsky said, is that either Sperry's or Burroughs' mainframe lines would be discontinued if a merger is consummated, despite Burroughs' statements to the contrary.

"On a daily basis, executives are making decisions on the acquisition of computer systems. If they have two or three proposals in hand, one from Sperry, one from Burroughs and one from IBM, they may decide to go with IBM because of concern about the future of the other two firms' product lines," Litsky said.

"I can't imagine a combined company able to maintain two mainframe lines that are not compatible with one another," he added.

Litsky lauded Sperry's rebuff of Burroughs. He said a merger of the two BUNCH companies would not benefit either firm's customers or shareholders. "I don't believe that together they could have an impact on IBM," Litsky said. "They'd be just slightly bigger than DEC."

Meanwhile, the winner of the battle for control of the New York-based Sperry would be saddled with an inordinate amount of debt. Burroughs said it would have to borrow $3 billion to acquire Sperry, and Sperry last week said it would have to borrow $2 billion to finance its stock buy-back proposal.

"The question is, depending on the outcome, 'What impact would such a debt load have on future R&D, manufacturing and marketing expenses at either firm?' " said one analyst who requested anonymity. "The only ones who would benefit from all this are the financial institutions lending the money."

Prepared to negotiate

Late last week, in a letter to Sperry Chairman Gerald G. Probst, Burroughs Chairman W. Michael Blumenthal said the Detroit firm is prepared to "negotiate a meaningful increase" to its $70-a-share acquisition offer.

The letter was in response to a Sperry filing with the Securities and Exchange Commission, in which the New York firm said, among other things, it has considered selling itself, divesting of principal assets or forming a joint venture with another concern to defend against Burroughs' hostile takeover initiative.

"Burroughs was not expecting to pay $70 a share; it knew there would be a counteroffer," noted Donald Raback, an analyst with Smith Barney, Harris Upham & Co. "Last time Burroughs offered $65 and wasn't will-

ing to accept $68. This time the question is: How high is Burroughs willing to go?"

With the parameters of the deal now in place, analysts said negotiations between the two firms could begin in the $75-a-share vicinity. At $75 a share, the value of the acquisition increases by $500 million to $4.6 billion.

The $4.6 billion price tag is sure to dissuade all but the most serious of firms to try and out-bid Burroughs, analysts said. Sperry's conditional stock buy-back plan, however, would provide time for any of the potential white knights mentioned, including AT&T, Chrysler Corp., Ford Motor Co., Honeywell, Inc. and NCR Corp. to formulate a bid of their own.

"I can't imagine any of those firms starting cold and coming up with a acquisition plan in a short period of time," noted Harvey Poppel of acquisition and merger specialist Broadview Associates. "Most of them move at the speed of a glacier when it comes to strategic decisions."

The Sperry board recommended that Sperry stockholders not tender their shares until its buy-back plan commences. Sperry said it has $800 million in funds and is negotiating a $2 million credit facility with banks to finance its stock buy-back plan.

Sperry last week filed a complaint in Delaware Chancery Court asking that the Court validate Sperry's tender proposal under Delaware law and enjoin Burroughs from bringing any legal action in any other court attacking its offer.

Martin Marietta announces Ramis II enhancements

Improves multiuser access, adds interface

By Eddy Goldberg

PRINCETON, N.J. — Martin Marietta Data Systems last week announced numerous enhancements, including data maintenance concurrency and a menu-based user interface, to Ramis II, its fourth-generation language and applications development tool.

The Data Maintenance Facility (DMF) Concurrency feature allows multiple users to simultaneously access shared Ramis II files and data bases in both interactive and batch

environments, the company said.

Bob Bosch, director of Ramis II marketing, said tests of DMF Concurrency showed it performed about 4.8 transactions per second lightly loaded with 19 users.

The user front end, called the Ramis II Menu-Based Architecture (RMBA), allows users to access Ramis II facilities through a series of windows and menus like those in Unison, Martin Marietta's line of personal computer software products.

Ramis II Release 85.3 also supports natural language options as well as interfaces to IBM's DB2 and SQL/DS. Performance improvements to the Systems Building Executive, Formatted Screen Manager, Smart-

edit, and DMS and DL/1 interfaces are also included.

The Ramis II English Release 2 update adds natural language graphics and automatic processing of time-related expressions for interactive related expressions for interactive users in the MVS and CMS environments. It costs $13,500 to $27,000.

The DB2 and SQL/DS interfaces allow users to generate Ramis II reports from DB2 and SQL/DS files using standard Ramis II report requests and cost $2,250 to $6,750.

Ramis II Release 85.3 is currently available for the VM/CMS, MVS and DOS/VSE environments for $30,000 to $90,000. It is provided free to current Ramis II users and is upwardly compatible with previous releases.

TOP OF THE NEWS

Free maintenance of Sperry equipment for one year was included recently in the company's successful bid for a systems contract for the city of Pueblo, Colo., a move seen as continued aggression against its third-party resellers. The city accepted Sperry's bid for a System 80 Model 8 for $380,000.

Availability of AT&T's Unix System V Release 3 is still set for midyear despite rumors of delays to year's end, according to Bill O'Shea, executive director of AT&T Information Systems' Software Systems Division. A full demonstration of the product is scheduled for the National Computer Conference in Las Vegas in June.

NEWS

Jacore to resell Canaan DCS 5800 systems

Firm hopes to crack Fortune 1,000 through $62 million VAR deal

By James Connolly

TRUMBULL, Conn. — Formerly one of IBM's largest value-added resellers, Jacore Systems Co. of Marietta, Ga., has contracted to distribute departmental systems made by IBM software-compatible manufacturer Canaan Computer Corp. of Trumbull.

According to Canaan officials, the three-year reseller agreement is valued at $62 million.

Jacore will resell Canaan's DCS 5800, which Canaan announced in January as a competitor for the IBM 4361 and System/36 in departmental processing applications.

Jacore reportedly was one of IBM's largest value-added resellers in terms of sales, with $60 million in revenue in 1985, much of it from sales of the System/36.

No longer offers System/36

Jacore no longer offers the System/36, but it does sell AT&T's 3B line of minicomputers. It also sells Microvax II and PDP-11 equipment from Digital Equipment Corp.

"It is one of the largest contracts signed in our company's history. It is significant in that Jacore is one of the largest IBM value-added resellers, with a large distribution network in place," according to Canaan President Ron Ritchie.

Canaan distributes its products through OEMs and value-added resellers. The DCS 5800 was designed to run software compatible with IBM's VM/CMS and to support up to 36 users working with the IBM Personal Computers and compatibles or a variety of terminals. The DCS 5800 is priced at $62,000 for a 12-user configuration.

Canaan in Fortune 1,000 mart

Ritchie claimed that Jacore contract will establish Canaan in the Fortune 1,000 marketplace.

Jacore Chairman Jim Jacobson said of the deal, "We have decided to pursue an agreement with Canaan that exceeds our total annual sales for last year because we believe that Canaan's VM/CMS-compatible system provides a unique solution for departmental computing in Fortune 1,000 companies."

Jacore resells minicomputers and peripherals through an agent and reseller network. The value that Jacore adds will be systems support and applications software, according to Canaan.

Users await protocol fixes

From page 1

to continue increasing the functionality the specifications without sacrificing their stability.

The one-day conference was the first official meeting of the combined MAP/TOP groups.

The likelihood of MAP and TOP protocols continuing to change over the next year has delayed a number of planned MAP installations, company spokesmen said. According to systems engineer Dan Mikhovic, diversified manufacturer Weyerhaeuser Co. opted to wait until some of the confusion surrounding MAP had dissipated before taking the plunge. Weyerhaeuser will be accepting bids from vendors this year and plans to begin implementing a MAP network in 1987.

"We're planning to wait until 1987, when some of the technical issues like interoperability and network management are being resolved," Mikhovic said.

Rather than postpone its project until the remaining MAP specifications have been finalized, the Rensselaer Polytechnic Institute decided to proceed at a slow pace. This fall, the School of Engineering will implement a MAP network connecting two IBM 4381s, a Digital Equipment Corp. VAX-11/780 acting as a shop floor controller and a Microvax II. The next phase, scheduled to begin in the spring of 1987, involves connecting other parts of the engineering school on the MAP network.

MAP is a set of factory networking protocols based on the 802.4 token-bus standard. TOP, networking protocols designed for the office, is based on the 802.3 Ethernet standard. Since MAP and TOP use many of the same communications interfaces, users can link their business and factory systems by bridging the two types of networks.

Nobel Manditi, a senior consultant at Northrop Corp., said that higher level MAP protocols are starting to solidify but that "theorizing is not enough: you have to use them."

He said many aerospace manufacturers, including Northrop, are currently testing on their manufacturing facilities the upper layers of MAP, such as the File Transfer Protocol for connecting TOP and MAP networks, and FTAM.

Vic Lukasik of Boeing Computer Services Co. reported that the TOP Technical Working Group Electronic Mail Subcommittee is currently discussing how two emerging document transfer protocols, X.400 and Electronic Document Interchange, may be incorporated into TOP. The TOP group also announced its intention to support 802.3 on broadband coaxial cable.

During the MAP/TOP Implementation Panel, an attendee asked how

> **"**
> *'Higher level MAP protocols are starting to solidify, but theorizing is not enough: you have to use them.'*
> — Nobel Manditi
> Northrop Corp.

vendors "could afford to aim at a moving target and keep up with changes in specifications."

One vendor spokesman responded, "We encourage prudent migration to new specifications" but added that standards organizations should "balance the trade-offs between adding the next bell and whistle and impact on the marketplace."

Network vendors voiced support for the idea of limiting protocol updates to the communications interfaces "so that users can update each layer without having to tear apart their plant system," as one vendor put it.

At the conference, Retix announced a compiler that makes it easier for users to implement additions and updates to existing MAP protocols such as FTAM, "which is out there, but still not a standard," Retix President Charles Fogg said.

Linking MAP and TOP networks to other communications standards — particularly the IBM Token-Ring — was another major vendor and user concern at the conference.

"I think there is a definite need to bring the office and factory together," said Stephanie Nader, a technical specialist at McDonnell Douglas Corp. The company is interested in implementing MAP and TOP in an information system currently under development, which will link "any computer to any computer," Nader said.

Several developments at the conference prompted the eventual integration of MAP- and TOP-based networks with other networks:

• The TOP Technical Working Group reported that they are discussing how IBM Token-Ring networks can be linked to Ethernet 802.3 networks using TOP. "Initially the idea generated a lot of consternation because people thought IBM was controlling 802.5 too much, especially since they had not released many of their specification," said Lukasik. "Now, they seem as locked into the 802.5 standard as anyone else."

• Touch Communication, Inc. demonstrated a prototype network that connected an IBM Token-Ring and an Ethernet 802.3 system.

The prototype linked IBM Personal Computer ATs on the Token-Ring, and Sun Microsystems, Inc. workstations and PC ATs on an Ethernet, using three vendors' implementations of the MAP protocol FTAM.

Touch Communications plans to release a commercial version of its software product later this year, said Vice-President of R&D Brian McGann. The package will implement Layers 3 through 7 of MAP and TOP specifications for the OSI model on a variety of vendors' systems.

• DEC and Data General Corp. unveiled plans for providing migration paths between their proprietary networks and MAP.

Also at the conference, Concord Data Systems, Inc. announced the Series 4100, a family of bridges that interconnect Concord's 10M bit/sec. broadband and 5M bit/sec. carrierband MAP networks.

And Industrial Networking announced that its MAP/One local-area network had successfully completed testing for MAP 2.1 conformance at private testing company ITI.

Senior writer Rosemary Hamilton contributed to this report.

FCC move eases restrictions

North American Telecommunications Association, a trade group for independent telephone distributors, criticized the FCC for eliminating the subsidiary rule and substituting what he called "phantom safeguards" against cross-subsidies.

The agency replaced the structural separation rule with less restrictive accounting and technical safeguards that are intended to accomplish the same goal, which is to prevent the regional holding companies from using their telephone companies to subsidize their new businesses.

AT&T and the regional holding companies argued, and the FCC agreed, that the separate subsidiary rule prevented the companies from offering the kind of enhanced network services that independent vendors can offer. AT&T, for example, said the separate subsidiary rule kept it from offering a voice store-and-forward service.

To prevent discrimination against other enhanced-service providers, the FCC ordered AT&T and the regional holding companies to establish open network architectures by 1988 and to provide enhanced-service competitors with equal access — called comparably efficient interconnection (CEI) — to the basic communications network.

AT&T is pleased with the FCC decision to eliminate structural separation, a spokeswoman said, but is concerned that complex procedures for establishing CEI will create long delays before any new services can be offered. She said the CEI rule was designed to prevent abuses by the local telephone "bottleneck" companies and should not have been applied to AT&T, which no longer has a monopoly.

"The Third Computer Inquiry is just one of the two regulatory doors we need to open," said a spokesman for Southwestern Bell Corp., one of the regional companies. "We'd like to see the second door — the restrictions of the divestiture consent decree — opened, whether it's through congressional or judicial action."

The FCC decided not to tamper with the fundamental regulatory framework established by the Second Computer Inquiry in 1980, under which basic telecommunications services are regulated and enhanced services are not. However, the commission remained undecided on how to classify protocol conversion, and deferred that decision to a later date.

The commissioners said they seek public comments on whether to classify protocol conversion as an unregulated enhanced service, as it is now, or as a regulated basic service or to decide its status on a case-by-case basis.

The FCC's action last week was far less radical than the major regulatory overhaul the agency originally proposed last year [CW, Aug. 5]. The agency had considered scrapping the basic and enhanced service categories, instead regulating only those telecommunications services that are offered by dominant carriers and lack a competitive market. But overwhelming opposition from the industry and users killed that proposal.

IBM PC exec talks strategy

To me, that's different than a television set or a VCR.

That's particularly true if you look at the large-account applications of the products — tying the workstations closer together with intermediate and large processors, sharing data bases, being able to provide applications that span the workstation and the processor in a way that doesn't require the user to get involved in all that complexity.

There are going to be people buying at the low end of the PC business today, taking advantage of the low costs and prices that are available from us and from competitors. My expectation is that, at the low end as well as in large accounts, there's a lot to be done in terms of interfaces, new applications, new I/O devices, connectivity to data bases outside the home. These are going to be available primarily through new design points.

CW: So what is your message to MIS shops now looking for cheap micros?
LOWE: The message is twofold. No. 1, I'm going to be price- and cost-competitive at the low end of my product line. And No. 2, I will maintain compatibility with my product line, with the future devices that I'm going to provide. The wise shopper ought to look at, in addition to price, ongoing maintenance costs and the ongoing application of his machine, and make sure that it is fully compatible to the degree he needs it.

I can match, in manufacturing costs, anyone, either U.S. or abroad. We source the same components. I offset the low labor costs overseas through automation, in investments in my plants here.

The product will become more complex — hopefully not to the end user, but in terms of the function that we're providing. It's pretty tough to provide that level of function without making an investment. And if you make an investment you've got to recover it, whether you're IBM or whether you're a clone.

CW: You've also been stressing reliability.
LOWE: We set out, when we first built the PC, to build a stand-alone machine for personal productivity or for the programming professional to utilize at home. We set a set of objectives, which I now think have to be improved upon when you look at large accounts.

We keep setting very high, tough reliability goals which, frankly, are much more stringent than the ones we set for our product when we first started. We'll be setting objectives for the number of repair actions over a period of time that will be at least 10 times better on products we have under development than products we had under development two or three years ago.

Also, as we're tying the products more tightly into intermediate and large processors in large-account networking situations, we are mak-

ing sure to support that in software, with error correction routines and network management capabilities.

CW: What are your most common requests from large corporate users?
LOWE: I would say connectivity of the PC, communications, networking and data bases are very high on the demand statement.

The next thing is obviously being able to support more than the 640K bytes on an operating system basis rather than through the techniques that have supported it up to now

CW: What's the progress on PC-DOS?

LOWE: We're investing in software a great deal. We're focused on it — expanding the addressability, providing a base for enhanced communications capability, with multitasking and eventually multiuser capability.

CW: Where is IBM focusing its work on PC-to-large-system connectivity?
LOWE: We've been working on the problems of data support and office systems support across our product line. We've made some good strides forward.

And we've talked about cooperative processing. We're intent on providing a set of open interfaces, which will be on the PC as well as the intermediate and large processors, that will allow sharing of information and the movement of information and the sharing of resources between workstations and the intermediate and large processors.

We have described before, and I know I've got a big team in Austin working on, a set of service requests on our products on it will work well with host support, whether that's a 370 or System/36. So that you can utilize the services of an intermediate or large processor — virtual file, virtual print and other resources — as if it were resident on the workstation. Or download from the processor the management of the workstation interface.

It's attempting to provide a shell of software so that the resources between the host and the PC can be

utilized by the end user without getting into the complexity of the handoffs between the workstation and the big system.

CW: How's the PC Convertible doing?
LOWE: It's sold much better than we expected. Our expectation now for 1986 is two to three times higher than what it was when we announced the product. As a new class of product — a small-footprint desktop that can also travel — there's probably a lot more potential than the industry realized.

We don't have the Convertible in high-volume retail marketing yet.

We have gotten a great deal of demand from large accounts and a very high level of demand from education. The largest volume customers are in the insurance industry. There's also a good deal of interest from management consultants and financial consultants.

CW: What's been the response to the 3½-in. disk drives?

Steady growth out the Personal Computer

LOWE: I was not concerned with the 3½-in. when we came out, and I'm not concerned with the 3½-in. now. It fits in your shirt pocket, it's convenient, it holds more information than the standard 5¼ and it's a good deal.

It has helped us a great deal with one of the most [important] attributes of the Convertible, and that's the footprint.

For a high percentage of the machines on order, customers have ordered a desktop CRT as well. I think there's a great deal of advantage to having it as a desktop and being able to carry it as well.

CW: How does the 3270 Personal Computer now fit with the rest of the PC line?
LOWE: Consistency with the 3270 family is very important to many of our large customers.

The 3270-PC, when first introduced, unfortunately took the approach of taking the PC base and sort of redesigning it into a product, rather than adding a card or attri-

butes into a PC base. Therefore, when we came out with an XT and came out with an AT, it took us longer to announce the 3270-PC versions.

We're moving in the direction of getting those things together. I would think that eventually we'll build some MFI [main frame interactive, the 3270 interface] attributes into the base of the PC.

CW: Does the RT Personal Computer's architecture give an indication that future IBM desktop systems are likely to standardize on the PC AT bus?
LOWE: I wouldn't draw any strategic significance beyond the intent to give access to the applications and the attachments available on a PC.

CW: Is IBM gaining significant changes in selling and supporting micro software, as are the major independents like Lotus?
LOWE: We get hit with many of those questions ourselves, with the facilities and functions that we own.

I was expecting you to ask about site licensing. I think there's a lot of misunderstanding about site licensing and the business of software. Somehow people seem to think that hardware is a business and software is free.

I'm investing more in software than I am in hardware. I focus on the business equation just as hard on software as I do on hardware. And when we have large customers who want high volumes of software, on a cost-justified basis I provide them a volume discount, just like I do in hardware.

I'm intent on getting a return on my investment in software, just as I am in hardware. In a lot of what I read about site licensing, somehow that factor gets left out.

CW: What options is IBM examining in copy protection?
LOWE: We've got copyright, we've got copy protection, and we work with customers on problems like downloading software, the number of people who use it and the number of licenses. Our corporate customers are very responsible in this regard.

To provide a scheme that is more or less foolproof is a complex question. It's got to be something that doesn't encumber usage, can't cost much and is tamperproof. That's quite a combination of requirements. We're going to work on that, and if we develop something it will be in concert with our application providers.

CW: How will the changes in distribution channels affect IBM?
LOWE: I'm not concerned about the changes that I've seen over the last six to 12 months.

My plan is to use the distribution channels as we go through time with about the same mix of placement that we have now.

We've taken a lot of steps, particularly in the last six months, to strengthen our relationship with our retailers. The decision not to expand the retail chain greatly in numbers, the actions we've taken against gray marketing . . . and the [price protection] package that we announced April 2 provide our dealers with more IBM support.

NEWS

Dearth of product announcements marks graphics show

But record crowd views many enhancements in 'mature' industry

By Rosemary Hamilton

ANAHEIM, Calif. — Despite a record-breaking crowd of more than 30,000 and a display of more than 1,000 products, the annual National Computer Graphics Conference last week lacked excitement because there were few major new products.

"I've seen some improvements, but nothing much new," said Jules Picie, a programmer with Synerser Corp., which does contract work for the National Aeronautics and Space Administration's Edwards Air Force Base in Edwards, Calif. "It seems like this year is for refinements."

Rather than breaking new ground in graphics technology, most vendors introduced enhancements to existing products or used the conference, which was sponsored by the National Computer Graphics Association (NCGA), to display products that were introduced earlier this year.

The show seemed to reflect a recent NCGA study that was published in Technical and Business Communications, Inc.'s "The S. Klein Newsletter on Computer Graphics." It concluded that "the industry is at a technologically mature stage, with product development becoming more evolutionary, rather than revolutionary in nature."

Ronald Ball, chairman of this year's conference, acknowledged that it was more subdued than those of other years. NCGA has been sponsoring the conference since 1980. That first show brought in a mere 1,700 people, but each year the show has continued to flourish.

So Ball said he expects it to continue that way, "as long as we're the place they can come to see whatever it is they want to see about graphics."

Lack of debuts not disappointing

A random survey of NCGA attendees indicated that the lack of cutting-edge product debuts did not cause much disappointment. Many attendees said they use the graphics show to keep up with what is currently available on the market, rather than to learn about new trends.

"I'm not interested in a new system," said William Black, a senior computer-assisted design and manufacturing engineer at Aerojet Strategic Propulsion Co. in Sacramento, Calif. "I like to come here to get a flavor for where the industry is at."

Black, like other attendees interviewed, was impressed with the strong microcomputer presence in the CAD/CAM displays on the show floor. As a user of McDonnell Douglas Corp. Unigraphics workstations, he said he was on his way to check out the vendor's new micro offering.

PC Productivity Systems, a McDonnell Douglas company, introduced Crossroads, a $2,996 mechanical engineering package that runs on IBM Personal Computers. In addition to PC Productivity, there were dozens of other vendors with microcomputer-based CAD/CAM software, including AT&T, for instance, devoted almost its entire exhibit to CAD systems based on its PC 6300

and PC 6300 Plus.

But the workstation vendors were not to be outdone by the micro companies; and some of the major players, including Digital Equipment Corp., Sun Microsystems, Inc. and IBM, which showed its new workstation RT Personal Computer, were drawing large crowds at the show. Notably absent was Apollo Computer, Inc., which did not have its own booth, although its systems were being used in at least three software vendors' exhibits.

In keeping with the evolutionary vs. revolutionary trend cited in the NCGA study, both IBM and Cadam, Inc., a maker of CAD/CAM software, announced they had ported main-

frame software packages to lower end systems. IBM was running its CAEDS electrical design software, which has been available on such systems as its 6080 Graphics System, on its RT PC.

Cadam introduced Micro Cadam, a scaled-down version of its mainframe package for IBM PCs. The package will sell for $8,000 and is targeted at first-time users as well as Cadam's installed base, which now has the option of running CAD/CAM software on a desktop.

Among the OEM deals announced at the show was a $30 million agreement between McDonnell Douglas and Tektronix, Inc. McDonnell Douglas said it will incorporate five of the

Tektronix graphics terminals into its Unigraphics product line.

Massachusetts Computer Corp. (Masscomp) announced it would incorporate the General Electric Co. Graphicon 700 graphic processor into the high end of its workstation line. GE, which announced the processor last month, said Masscomp is the first company to sign on as an OEM.

Silicon Graphics, Inc., a maker of high-end graphics workstations, announced that it will resell OEM hardware from MIPS Computer Systems, Inc. for its next generation of workstations. Earlier this month, MIPS announced its proprietary reduced instruction set computer hardware.

NEWS

Software AG development tool ties SQL applications, Adabas

Also supports programs written in Cobol, PL/I

By Maura McEnaney

SAN DIEGO — Software AG of North America, Inc. last week became the latest systems software vendor to support IBM's SQL, announcing to users the AdaSQL application development tool.

AdaSQL allows IBM users running Software AG's Adabas data base management system to translate an application's SQL commands into commands that can be read by Adabas.

Software AG officials acknowledged that few existing Adabas applications use such commands and that the product is oriented toward the day when SQL is established as a standard and Adabas users want to employ it.

Announced at the 15th Annual Users' Conference, AdaSQL also translates SQL commands embedded in Cobol and PL/I programs into access commands to be used with the Adabas data base management system. Future support for Fortran and the U.S. Department of Defense's Ada language is expected, the company said.

"We expect future adaption to the evolving standard of SQL because currently there is no standard," said Software AG's Executive Vice-President Peter Page.

The AdaSQL product cannot translate all SQL commands to Adabas, according to Bruce Mancinelli, vice-president of development at Software AG.

Although the company has announced no release date, officials said Software AG is committed to interface Adabas to IBM's relational product, DB2, just as it has interfaced Adabas to IBM's VSAM and DL/I file management systems, Mancinelli said.

Software AG is committed to bring out before the end of the year a new version of Adabas "to selected accounts," but it will primarily be a version with enhanced performance characteristics rather than one that works with DB2 and SQL, Mancinelli said (see story page 19).

Robert J. Becker, data base and data communications administrator for Fremont Insurance Co. in Grand Rapids, Mich., said the new version of Adabas will have improved performance through enhanced I/O efficiency.

"Software AG has gone to the Execute Channel Program level for I/O communications, which has a lot less operating system overhead, instead of continuing to rely on IBAM," he said.

Adamint replacement

Users see AdaSQL as a replacement for what Software AG officials termed an "outdated" earlier product, Adamint, which acted as an interface between Cobol applications and the Adabas DBMS. In addition to its ability to read about two-thirds of all SQL statements, AdaSQL can be integrated with the Predict data dictionary for cross-referencing capabilities.

Conference attendee Larry Heard, data base administrator for RMI, Inc., a construction installer systems manufacturer in Tulsa, Okla., now heavily uses Adamint to give his Cobol and assembler human resources and order processing applications access to the Adabas DBMS. "AdaSQL will make a Cobol application look more like an Adabas application," he said.

AdaSQL for IBM's OS/MVS and DOS/VSE operating systems will be available in September. A version for Digital Equipment Corp.'s VAX/VMS machine will be available in the first quarter next year, company officials said. Prices range from $10,000 to $15,000.

Other debuts

Also announced by Software AG were the following:

• Com-Pose, an on-line environment manager for IBM MVS and DOS/VSE users running CICS, TSO or CMS. Com-Pose acts as the central communications manager for Software AG's information center, development center office automation and communications system products. Available in July, Com-Pose costs $35,000 for DOS/VSE and $45,000 for MVS.

• Net-Pass, an application session manager that allows users to conduct several logical sessions from an IBM 3270-type terminal. The product works on IBM mainframes running MVS/XA, OS/VSI and DOS/VSE systems. Scheduled for release in October, Net-Pass is priced from $15,000 to $25,000.

• Adabas/Total Bridge, which allows users of Cincom Systems, Inc.'s Total DBMS to move file structures to Adabas while running existing applications. Adabas/Total Bridge runs on IBM mainframes running DOS/VSE, MVS and OS/VSI. Available in July, the product ranges in price from $20,000 to $30,000.

• Natural/DL1, a facility that allows users of Software AG's Natural fourth-generation language to develop applications directed at DL/1 file structures. Available in November, the product is priced from $30,000 to $40,000 for DOS/VSE, MVS and VSI operating systems.

NEWS

Prime users group wards off vendors to celebrate 10th year

Third-party show steals some users' attention

By Donna Raimondi

RENO, Nev. — Several hundred users of Prime Computer, Inc. equipment gathered last week to swap information at the 10th anniversary of their users group. But many were also eager to view a trade show the National Prime Users Group (NPUG) tried to keep at a distance.

About 900 members of NPUG, sanctioned by Prime in 1984 as the official users group for Prime customers, were treated to a historical exhibit of Prime systems in keeping with the meeting's theme, "Ten Years of Progress." Meanwhile, a group of about 30 Prime-compatible third-party vendors held its own exhibition, Compatibles '86, despite the disdain of NPUG officials.

Many Prime users readily agreed with NPUG's position that users can obtain more valuable information from other users than from vendors. "I'm looking at the direction the Prime operating system is taking and a few other things, but mostly I'm here for educational fill-in and to get a sense of the rest of the Prime community," said attendee Michael Stein, office computer systems manager at the Environmental Protection Agency (EPA) in Washington, D.C.

Often, when new revisions of Primos are installed, "we at least temporarily lose a feature," he said. The users group meeting is generally a good place to find other people who have had the same problems and solved them, he added.

Others, though, were willing to listen to the sales pitches of the third-party vendors. Ann Mihalovic, senior applications analyst and programmer at American Greeting Card Corp., planned to use the resources of both NPUG conference and the Compatibles '86 exposition.

American Greeting Card operates two 9955s and a Prime 850 plus 10 other Prime systems. The company also uses third-party software. "I'm looking for a Fortran 77 compiler at the third-party show, and at NPUG I attended a Primos Rev. 19.4 class for programmers," she explained.

Another user who enjoyed the opportunity to view both the sanctioned Prime exhibits and the wares of the third-party vendors was Bruce Kerns of Alumax, Inc., an aluminum manufacturer in San Mateo, Calif. "I'm here to look at new Prime products here and at compatibles from other vendors downstairs [at Compatibles '86]," Kerns said.

Alumax has switched in the past year from an IBM System/38, several IBM 370s in manufacturing units and some McDonnell Douglas Computer System Co. Microdata systems to Prime machines. He runs the Pick Systems' Pick-based Prime Information system on Prime systems that in-

clude the 9955s.

Kerns said Prime Information is not really efficient, but it has an effective end-user interface. "I'm interested in meeting other people with it, and this meeting has been good for that," he said.

Prime Information saw a 25% increase in sales from 1984 to 1985 and a 60% growth rate the previous year. The product is a key in Prime's strategy, according to Lou Volpe, group product and planning manager. "We put together seven sites to measure performance. The results of the study are coming in now and will be turned into revisions for Prime Information and Primos during 1986," Volpe said.

NPUG's insistence on being an educational forum led to a decision to bar any kind of commercial ventures within the conference, said John Steffan, president of John Steffan Associates of Chicago, who served as the group's first president when it was formed a decade ago.

This policy has led to friction between Prime and the third-party vendors. Prime insists that since the policy is to bar marketing and since Prime honors that policy by not selling or hawking at the show, then other vendors should not have that right either. Steffan explained.

> **"**
> *'We don't mind being separate, but we do want to be in the same building.'*
> **— Mitch Modeleski**
> **Mitchell Associates**

"We don't mind being separate, but we do want to be in the same building. We would appreciate it if NPUG would stop active opposition to us," said Mitch Modeleski, president of software developer Mitchell Associates in San Rafael, Calif., and one of organizers of the third-party show. "In the computer industry, the presence of peripheral products indicates a healthy host in a mature marketplace," Modeleski said. "Digital Equipment Corp. and Data General Corp. are Prime's competitors, not us," he added.

"We feel that it is not our problem. We settled it years ago," said NPUG's President-Elect Patricia Craig, customer support manager at the research computing center of the University of New Hampshire. "We are opposed to a trade show environment. Users can get that in a number of places, but what we offer is education and communication."

In a kickoff speech on activity at Prime since the last users group meeting, Mike Harries, Prime director of central systems, said Prime's strategy for the future will be to maximize use of each design effort through enhancements and mid-life kickers to existing products.

The company reaffirmed that it is committed to the Manufacturing Automation Protocol and also announced last week it is developing products to support the Technical Office Protocol specifications.

The only software announcement made was that a revision of the Primix operating system Rev. 2.2, which enhances some utilities, will be available fourth-quarter 1986.

NEWS

U.S. Commerce official blasts Japanese industrial strategy

By Mitch Betts

WASHINGTON, D.C. — A high-level official of the U.S. Department of Commerce last week blasted Japan's strategy for assisting its computer and electronics industries as a "destructive, zero-sum game" that should be abandoned.

In a speech at a Washington, D.C., symposium, Bruce Merrifield said Japan's government grooms a targeted industry, protects its domestic market and subsidizes exports so that the industry can dominate the U.S. market with products that are priced below cost. He cited Japan's semiconductor industry as one beneficiary of this industrial strategy.

"It's a destructive, zero-sum game. We need to abandon that and instead collaborate together to expand the global economy," Merrifield said.

He warned that Japan may ruin whole industries by flooding markets with below-cost products and may not be able to recoup its massive investment in industrial subsidies.

Merrifield, assistant secre-

tary for productivity, technology and innovation, spoke at a symposium sponsored by the American Federation of Information Processing Societies, Inc. Panelists discussed what role the U.S. government should have in the so-called information revolution of the next 25 years.

The Commerce Department official said the U.S. government should support education, research and the conversion of research into better products by reducing the regulatory and financial barriers to innovative research and development.

Rep. Don Ritter (R-N.Y.), another panelist, said that even in a budget cutting climate, the U.S. government should continue to fund the computer and robotics research program of the National Science Foundation and the National Bureau of Standards. "We shouldn't eliminate an investment in our future," he said.

Boehlert and Richard P. Case, director of technical personnel development at IBM, also urged government and industry to provide more support for education.

Expert forecasts computers' impact

Warns against becoming 'race of menu pickers'

By David A. Ludlum

NEW ORLEANS — Expert systems and other computer technologies could inhibit initiative and social interaction in the next century, but history suggests such threats will be overcome, a noted forecaster told the annual conference of the Association for Systems Management last week.

The conference opened with an address titled "Future Computers and Their Impact," by Frederic G. Withington, a vice-president of Arthur D. Little, Inc., a Cambridge, Mass.-based consulting firm known for developing systems and forecasting technology.

Withington warned that the increasingly powerful computers of the future could cause people to lose mathematical skills and similar sources of mental discipline as well as self-reliance, social interaction and individuality. Expert systems, in particular, could stifle inno-

vation, and people could become "a race of menu pickers," he said.

But the human race has always "muddled forward" when confronted with such technological backlash, Withington said. "A lot of people were hurt; a lot of blind alleys had to be barked out of," he said of earlier technological upheavals.

> *Powerful computers of the future could cause people to lose mathematical skills and similar sources of mental discipline.*

"But I feel sure information systems of the 21st century will be for the good and not oppress anybody for very long."

The computer forecast evolutionary, rather than revolutionary, developments in hardware and software technology through the early 21st century. He predicted semiconductors will continue

to power computers, voice recognition systems will still rely on the ability to match patterns and expert systems will remain limited to "complex but explicit" solutions.

Withington predicted greater changes in some other areas. He foresees flat color displays with photo-quality resolution, printers to match them and "personalized software," such as electronic mail programmed to route publications arriving at a company to individuals according to their interests.

The consultant said he sees major strides in communications through "wiring the planet" for two existing technologies — fiber optics and cellular radio. The chief obstacle to that is the cost, he added.

Among the potential results of such developments might be a pocket-size portable computer that will "communicate, inform, advise and make arrangements," Withington said. Such a "personal servant" might, for example, warn its owner not to drive after drinking, saying to him "I know you just had four drinks because I paid for them, and if you try to drive, I'll call the police."

NEWS

WORLD DIGEST
Computerworld
News Service

LONDON — IBM reportedly is trying to persuade UK users not to buy clones of its highly successful Personal Computer. Customers say the giant is hinting at locking them out of future compatibility if they don't buy exclusively from Big Blue.

Some users believe what they are being told by IBM, while others say it's just a scare tactic. Suppliers, however, are already feeling the effect. PCML, a UK firm that sells software and add-on products for the PC, says the feeling in the market has turned away from third parties.

LONDON — The British personal computer users group Compulink recently told the European Economic Commission (ECC) that IBM's clampdown on clone suppliers could result in increased microcomputer prices. In a letter to the EEC detailing its complaint against IBM, Compulink said users were concerned over possible market abuses that may have an impact on the fair competition laws established in the EEC's charter, the Treaty of Rome.

Specifically, the letter complains that IBM's recent moves against UK clone suppliers have sought to prevent those suppliers from doing business by charging IBM PC copyright infringement.

SYDNEY, Australia — The Australian High Court recently ruled that a computer object code was not protected by Australian copyright law prior to Copyright Act amend-

CORRECTIONS

The cost to upgrade 500 copies of Lotus Development Corp.'s 1-2-3 spreadsheet [CW, Dec. 23] is $62,500.

Jack Shevillo is executive vice-president of CMI Corp. [CW, March 24] in Bloomfield Hills, Mich.

Product information about Data General Corp.'s DG 7500 and 7700 workstations is available from DG, 6300 S. Syracuse Way, Englewood, Colo. 80111. The Unix operating system is available for both models [CW, March 10].

Sperry Corp.'s 1100 series mainframes running the SX operating system were omitted from Executive Report chart on Unix implementations [CW, Feb. 3].

The Multsess multiple session manager [CW, Nov. 18] is marketed by Westinghouse Electric Corp., Management Systems Software.

ments that were made June 15, 1984.

On May 6, the High Court delivered its 3-to-2 decision in the case of Computer Edge Pty. Ltd. vs. Apple Computer, Inc.

The Court heard an appeal by Computer Edge against a ruling by the Federal Court that the Wombat computer, which is imported from Taiwan, infringed on the copyright of Apple Computer Australia Pty. Ltd., a dispute that arose in 1983.

TOKYO — Devastated by the increasing value of the Japanese yen against the U.S. dollar, Japan's February communications equipment output almost leveled off at $679 million, up just 0.2% from a year ago, the latest monthly survey by the Communications Industries Association of Japan (CIAJ) said.

Also responsible for the February slump was a heavy drop — by 14.2% — in exports to the U.S. caused by

the wake of the bilateral trade discord between the two countries, CIAJ said.

MUNICH, West Germany — Under pressure from member countries now developing their own advanced telecommunications systems, the International Telecommunications Satellite Organization (Intelsat) last week pledged to make "every effort" to keep up with the development of Integrated Services

Digital Networks.

Intelsat is a Washington, D.C.-based nonprofit organization composed of 110 member countries. It owns and operates a worldwide satellite telecommunications system also used for domestic communications by 26 member countries.

TOKYO — Fueled by solid sales of high-end, 16-bit machines, Japanese personal computer shipments in 1985

NEWS

rose 18% from a year ago, to $3.47 billion, according to a recent Japan Electronic Industry Development Association (JEIDA) report. But by units, the shipments grew a sluggish 6% to 1.98 million units.

Broken down by market, domestic deliveries were valued at $2.34 billion, up 10%; by units, domestic shipments totaled 1.19 million. This amount was down 1% from the previous year. Overseas shipments reportedly

amounted to $1.13 billion, up 17% from the year before; by units, shipments amounted to 796,000, up 40%, JEIDA said.

● **TOKYO** — Nomura Securities Co. has become the first major Japanese firm to announce plans to use IBM's Token-Ring network. Nomura said it will use the system as part of its $425 million project to upgrade domestic and international brokerage

transactions.

Nomura, Japan's securities leader with 1986 operating revenues of $3.3 billion, Ltd.-developed local-area network system in its Tokyo headquarters and in each of its 120 branches.

● **TOKYO** — After a lengthy feasibility study, Nippon Telegraph and Telephone Corp., NEC Corp., Hitachi Ltd. and Fujitsu Ltd. have established

their former joint research project as a $25 million service bureau.

The newly formed company, called Internet Co., is also joined by *The Japan Economic Journal*, and will offer general-purpose value-added network services beginning in October, a spokesman said.

■■■ **VIENNA** — Microcomputer maker Epson America, Inc. plans to unveil a new laptop personal computer, accord-

ing to the company's Austrian distributor. The machine will offer more computing power than the Epson PX-8, popularly known in the U.S. as the Geneva model, the source said.

It is not yet known whether the new laptop will be IBM Personal Computer-compatible. A new inkjet printer will also be released before the end of the summer, which reportedly will be as easy to operate as a matrix printer, the source added.

CTA bribery case snares Pa. officials

By Stanley Gibson

HARRISBURG, Pa. — In a bribery case relating to a contract for computer services, a federal grand jury last week indicted two Pennsylvania political figures. The indictment charges that R. Budd Dwyer, state treasurer, and Robert B. Asher, former Republican committee chairman, agreed to accept a $300,000 bribe from a California computer services company in exchange for a $6 million government contract.

The indictments came as part of an ongoing investigation in what has become known in Pennsylvania as the CTA case, named after Computer Technology Associates, Inc. (CTA), the company that allegedly offered the bribes.

The company's owner, John Torquato, is serving a four-year sentence in California, relating to charges brought previously in the investigation. CTA is no longer in business.

The contract was for services in checking computer records of Social Security overpayments from public school employees. CTA was awarded the job on a no-bid basis. Another firm later submitted a bid for $1.3 million to perform the same work.

The indictment claimed the two men agreed to accept the money as a campaign contribution from CTA.

According to a reporter for the Harrisburg *Patriot*, CTA was headquartered in Torquato's California home.

The reporter said authorities found records of the planned bribe payments on computer disks owned by CTA.

A spokesman for Dwyer said the treasurer firmly maintains that he is innocent and is "looking forward to confronting his accusers in a legal setting."

If convicted, Dwyer and Asher each face up to 60 years in jail and $36,000 in fines.

VIEWPOINT

Chernobyl's reminder

Westerners frequently forget the distinction between purely computer technology and information technology, presuming all along that they are one and the same. The Soviet Union's leaders surely know the difference, and we should never forget it. Chernobyl has reminded us of that.

Information processing is but one by-product of computer technology, of course, but it is the focal application in most Western nations. These data-driven societies — especially the U.S., Europe and Japan — have seized on the free flow of information as a tool with which to create new industries, new markets and new wealth.

The Soviet Union is reported to be one of the world's largest consumers of data processing equipment, with the U.S. and Japan. Certainly the success of the Soviet space program is testimony to the USSR's command of computer technology.

But the Soviet Union of today remains as much the antithesis of an information-based society as it was in the darkest days of Josef Stalin. Due to dread and fear born of centuries of invasion and conquest, the Soviet Union is a ruthlessly closed society where to the general public the notion of "information" carries the sinister baggage of spies, informants and purges.

Perhaps the best way to combat the Red menace would be to back up truckloads of microcomputers and modems to the USSR borders and let the information revolution take its natural course. Surely if the Soviet people had an MCI Mail or Compuserve, the nation — and the world — would have known of the Chernobyl disaster in a matter of hours, not days.

The free flow of information between free peoples is a good worth aspiring to and protecting. It is one of the many things that separates West from East and one of the most vitally important. The U.S. computer community should never cease working to shape and extend the ideal of an information-based society.

Notes & observations

A news story in the May 12 *Computerworld*, notes that Wang Laboratories, Inc. is taking its lumps for presuming to charge for service that its users deem inadequate even when it's free. Meanwhile, the Volvo automobile people have attracted considerable attention with a new policy providing a range of otherwise pricey items associated with on-the-road breakdowns free of charge. When it comes to good customer relations, it's what you *do for* them that counts, not what you do *to* them.

According to the most recent U.S. Department of Labor statistics, seven of the nation's 10 fastest growing occupations are in computer-related fields. They are, in descending order of growth projected through 1995, computer programmers, computer systems analysts and data processors, data processing equipment repairers, electrical and electronics engineers, electrical and electronics technicians, computer operators and operators of peripheral electronic data processing equipment. So much for *that* computer slump!

PDN: Taxi convenience, bus capacity

As a provider of X.25 and packet assembler/disassembler software worldwide, I feel compelled to clear up some misinformation in Daniel Minoli's "Packet-switch perspective" [CW, March 31]. He states that packets typically have a minimum length of 128, 256 or 512 bytes and are not efficient because they are like a bus that must wait to be full before it departs. CCITT recommendations and public data network (PDN) implementations have maximum packet sizes but not minimum ones. Packet switching has the convenience of a taxicab with the capacity of a bus. So this problem with the packet switching industry is nonexistent.

Later, Minoli compares the cost of transmitting a 300K-byte file across the country on dial-up lines, with a 10K bit/sec. modem, with Tymnet. He does not say that when you pay for packet-switching service, you pay for guaranteed data integrity. What condition will a file be in when it arrives on voice-grade lines at 10K bit/sec.? If the modem is error correcting or if an asynchronous block protocol is used, then all error correction is at the user's expense in hardware, software and connect time. Even with 10K bit/sec. modems, a 10K throughput rate can never be achieved with data integrity because of modem falling back to a lower speed and retransmission. When you add all the costs, packet switching via PDNs is competitive.

Donald Berryman
TITN, Inc.
Edina, Minn.

Understanding data sublanguages

I recently read your interview with Ted Codd on fourth-generation languages, "Codd stresses importance of shared data and sublanguages" [CW, Feb. 24], and was upset with what I read. No reader there's so much confusion about fourth-generation languages. I'd like to set the record straight.

Codd states, "I don't know of any fourth-generation language that includes a relational data sublanguage . . ." This is not true. Oracle Corp.'s Oracle and Ingres Systems' Ingres, two fourth-generation language products, include the relational data sublanguage, SQL. The next release of Oublnet Software, Inc.'s product, IDMG/R, will contain an embedded SQL capability. Furthermore, fourth-generation-language vendors feel that their products are more user-friendly and

powerful than SQL.

Another inaccuracy in the interview relates to Codd's statements about fourth-generation language requiring record-at-a-time data base access and writing program loops. The first fourth-generation language, Martin Marietta Data Systems' Ramis, was developed so that access to data could be performed at a higher level. Ramis introduced concepts like Sum and Count that automatically access multiple data base records without any navigation or record-level commands like Open, Read and so on.

Finally, my list of benefits provided by fourth-generation languages includes: increased productivity, access to data by non-DP professionals, increased system acceptance through application prototyping approaches and less time to train new personnel.

I share Codd's feeling that screen painters are neat. However, I feel this assessment of fourth-generation languages does not do justice to a category of software tools that have revolutionized the application development process in corporate America.

Jeff Bernkopf
Fourgen Corp.
New York, N.Y.

T1 pricing forces network redesign

I would like to clarify comments you attributed to me as "T1 market opens up" [CW March 31].

Our decision to use Customer Controlled Reconfiguration was made at the time AT&T's Tariff's 260/279 were in effect. By the time we were ready to implement, Tariffs 9, 10, and 11 were filed, and they radically changed the relative pricing of T1s vs. comparable services. This unanticipated 150° turn in relative pricing by AT&T changed many of the assumptions on which we based our design. This has forced us to do a significant design reconfiguration to make the network more cost-effective. It also took a significant amount of time.

Building any T1 network in a period of developing technology and uncertain regulation has its risks. AT&T's erratic pricing complicated our short-term efforts to implement a long-term strategy. The process was expensive, but its part of the cost of technological change.

Robert W.J. Riekauta
Vice-President, Telecommunications
Merrill Lynch, Pierce, Fenner and Smith, Inc.

VIEWPOINT

When 186,000 miles per second just isn't fast enough

Let's talk about speed, you and I. The word has an incredible number of connotations. The speed of sound. Speed demon. The speed of light. Speed freak. Processing speed. Speed limit. Speeding ticket. All of these are fitting terms depending on a given situation.

For instance, I think it only fitting that I got a speeding ticket on the same day that the new Lamborghini Countach was featured in a national car magazine. I wasn't driving a Lamborghini, but I'd probably feel better if I had been.

More fitting is that Beaverton, Ore.-based Floating Point Systems, Inc.'s announcement last month of the world's fastest computer follows hot on the heels of the commemorative anniversary of the world's first computer, the ENIAC.

Limited only by the speed of light

Whereas the speed of the ENIAC relied substantially on human ability to adjust knobs and respond to blinking lights (the kind of stuff still used to represent computers in the movies), the speed of the Floating Point

T/40000 is limited to some extent by the speed of light. The company claims that this product has an arithmetic speed of 262G floating-point operations per second (FLOPS).

If this number doesn't mean anything to you, don't feel bad. For those of us who toil in the world of data terminals and personal computers, numbers of this type are still totally alien. Roughly stated, however, 262 GFLOPS translates to 262 billion floating-point operations per second. Yes, per second. Floating Point achieves this by integrating parallel processing, multiprocessing, reduced instruction set computing technology and hypercube interconnection — none of which I will discuss here because they each deserve their own individual columns simply to define them.

The point is that computing speed of incomprehensible magnitude is beginning to make its way to a computer near you. For those who pine away in personal fantasies of an individually assigned Cray, similar performance levels are becoming available in a wider variety of computers.

As prices start getting driven

By HARVEY P. NEWQUIST

down, limitations to potential users will reside in the slowness of the speed of light. For instance, the Floating Point product has a cable restriction of 40 feet. Why? One of the reasons is that's one half of a distance for you to ask something moving at the speed of light to travel. Remember, the speed of light is only 186,000 miles per second.

Another example is that the newest supercomputers are continually shrunk in size to improve a processing speed that is slowed by the distance between its connectors. So, why not just eliminate all the connectors by putting most of the processors on a single chip or wafer? Two years ago a very well-funded company known as Trilogy Ltd tried that using a custom-designed silicon wafer. The heat generated from passing electricity through this environment left Trilogy with the equivalent of a pool of liquid glass and many millions of dollars that disappeared in, well . . . no time at all. Again space becomes relative to the situation.

We are fast approaching a period when there is no such time as real-

time. In the cases cited above, real-time is too slow. For most of the world of computing, real-time would be a dream come true after hours, minutes and even seconds of waiting for our machines to grind out their reports and calculations.

Changing the way calculations are done

In regard to calculations, some recent discoveries from the Rochester Institute of Technology even change the way calculations are done in order to save time. Using a non-Euclidean geometry they have developed, a group of RIT researchers solved 99 integer equations that had 132 unknowns and arrive at a binary solution in 12 hours. That sounds fairly unimpressive.

But it has been estimated that simple brute force computer techniques attempting to solve the same equations would take several million centuries. Compare this concept with the idea of billions of floating-point operations per second and see if that doesn't screw up your sense of real-time.

So next time someone tells you to speed it up, or you don't think you have enough processor speed in your system, or perhaps your car is speeding along at a measly 61 miles per hour, remember — it's all very relative.

Newquist writes and consults on artificial intelligence and other advanced high-technology topics from his office in Scottsdale, Ariz.

Building systems projects that will get off the ground

Following college graduation I was hired by a custom programming shop headed by a retired general. After I worked for about two months on a poorly defined and ill-fated programming project, the general called me into his office and told me about a development project he had worked on while a member of the Joint Chiefs of Staff.

Not sure what specifications a new plane should have, the Pentagon commissioned a development team to determine the plane's requirements, design the plane, and arrange to have the plane built.

To determine the Armed Forces' design requirements, the team talked to senior Army, Navy and Air Force officers.

The Army officers insisted the new plane carry at a minimum 500 soldiers, 10 tanks and 25 jeeps. The senior Navy officers felt the new plane should take off and land on the smallest of the aircraft carriers and travel long distances without mid-air refueling. The Air Force officers wanted a plane that would fly at high altitudes at supersonic speeds and be undetectable by radar.

Committee design would not fly

Having defined their requirements, the team began designing the new plane. They did not want to ruf-

fle any of the senior officers' feathers, so they incorporated all of the branches' features and requirements into their design. The resulting design was truly a plane designed by committee and one, the general concluded, that would never take off.

While there are many critical factors in successful systems development, the general's story focuses on two: Clear, reasonable objectives and the right people.

Successful
projects are
those whose
scope is small, re-
alistic and sim-
ple. I have clients who have a "Keep It Simple" logo on the bottom of their memo stationery. Yet, when it comes to systems development, these clients attempt to build huge systems with countless screens, far too many options and supposedly tremendous flexibility, and then they wonder why the systems never get off the ground.

To help prevent these overly complex systems from finding their way into design and development, use a building block approach. Develop small, simple modules that have clearly defined interfaces and that can be easily combined. By developing these discrete modules, project developers can accomplish the following:

● Reduce the risk of something going wrong.

● Produce interim deliverables for users to test-ride.

● Improve system maintainability.

● Provide increased functionality by combining simple features.

READER'S PLATFORM

By EDWARD BRUCKSTEIN

● Enhance the system's flexibility and simplicity.

● Ensure the system's successful completion.

● Decrease the system's complexity.

The simplest solution may often also be the most elegant. The best example of this approach is the flood of spreadsheets that has hit the market. Lotus Development Corp.'s 1-2-3 and
most other
spreadsheet
packages use the
building block
approach in that
they provide
clear and easy-to-use discrete features that can be combined to provide more complex functionality.

Of course, ideally, every project would be staffed with a small number of highly experienced senior programmers. Realistically, that rarely happens. However, there are ways to make sure the project is staffed properly by providing senior people in these areas:

● Hardware: Having a person who has developed projects on this piece of hardware in the past allows the team to determine, in advance, what functions the machine performs well and what functions should be avoided.

● Application: Having individuals on the project that are familiar with those specific problem areas can eliminate a great deal of aggravation further down the road and help to ensure that the project does indeed fly.

● Business environment: By staffing the project with people who have

the industry expertise, management can expect a more solid product when the system is completed.

It is on these last two areas, application and business environment familiarity, that the value of user involvement becomes critical. While the systems development staff may believe they understand the user's environment, the systems they turn out often don't reflect that familiarity. What is needed is full-time user involvement in design decisions. Program walk-throughs and even casual discussions with the project team.

Cooperation is the key

The key word, however, is cooperation. All too often, unfortunately, users and the systems development team antagonize one another by not considering the technical and operational feasibility of the things they ask of one another.

Users who are active participants can develop a sense of system ownership and an understanding of the constraints under which MIS must work. Simultaneously, MIS can gain a feel for the problems the users are experiencing.

Finally, as I think back on the time I have spent observing and being involved in various clients' systems-development projects, I believe systems under development are best destined to take off when they are simple, clearly defined, closely monitored by users and built in small units.

Building systems that users understand and can work with is what this industry is all about. Make sure your system gets off the ground.

Bruckstein is a senior consultant with Peat, Marwick, Mitchell & Co.'s New York management consulting practice specializing in DP systems planning.

SOFTWARE & SERVICES

SOFTALK
Edward Warner

4GLs drawing bead on PCs

Fourth-generation languages (4GL) are on the move: Versions for the personal computer are becoming available, and in time, we will see hybrid languages that include the best of a fourth-generation language and Cobol.

The advantage of these languages is well known. They typically allow programmers to use English-style statements to produce in one line the equivalent of four or more lines of a third-generation language.

The advantage of a PC version of the language is also obvious: A mainframe is too expensive to tie down with a coding project. Therefore, it's better to develop software off-line on a microcomputer and upload the finished product to run on the mainframe host.

The early wave of fourth-generation languages for PCs includes PC/Focus from Information Builders, Inc., PC-Info from Henco Software, Inc. and the personal computer version of Applied Data Research, Inc.'s (ADR) Ideal, which is scheduled to be introduced this year. These are only the early arrivals. According to software industry analyst Damian Rinaldi of International Data Corp., based in Framingham, Mass., "More and more of the traditional 4GL tools are making their way to the PC environment."

While this development surely marks another small victory in the battle of the fourth-generation languages against the third-generation languages they seek to replace, it should not be

See 4GL page 24

Warner is editor of the Computerworld News Service.

Delay of Version 5 release disturbs some Adabas users

By Maura McEnaney

SAN DIEGO — Users group attendees, anticipating a new release of Software AG of North America, Inc.'s Adabas data base management system, instead got a preview of the product and a promise of a July controlled-release date.

While Adabas Version 5 promises I/O performance improvements of up to 42% in some cases over the 4-year-old Version 4, some of the more than 1,500 attendees at the 15th Annual Users Conference here were disappointed that Version 5 was a no-show.

"Last year they said by this time the new release would be out, and we'd all be discussing ways to improve it," said Gary Underhill, data base analyst at Mark Producing in Houston.

"People are pretty hot," said Ira Dobrow, president of Data Ideas, an Austin, Texas, consulting firm. According to Dobrow, discussion over the late release centers on features promised in Adabas Version 4 that are now slated for Version 5. Among those functions is the Read Descending function that would let files be read in inverted order.

Bruce Mancinelli, vice-president for development, said the delay has been caused by a decision to "add capability beyond what we had originally planned" and to ensure the product worked as expected upon release.

"There is nothing specific that has delayed the release; it's just that the development process took longer," said Software AG President and Chief Executive Officer Stuart Miller. "In retrospect, we probably could have been less specific about the release date," he said.

Many users, while anxious for the performance enhancements of the new data

See ADABAS page 24

SOFTWARE NOTES

TI unveils Prolog for AI workstation

Texas Instruments, Inc. of Austin, Texas, introduced TI Prolog for use on the TI Explorer artificial intelligence workstation. The TI version of Prolog is a superset of Digital Equipment Corp.'s Decsystem-10 Prolog, a popular implementation of the symbolic processing language. It combines features of Prolog and Lisp.

■

Cray Research, Inc. is making a version of AT&T's Unix System V available to run on its Cray-2, Cray X-MP and Cray-1 supercomputers. Called Unicos, it will be a foundation operating system for all Cray hardware products. The

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Software speeds war games task

By Eddy Goldberg

LIVERMORE, Calif. — Developing computerized war games for the U.S. Army is a job that requires sophisticated software engineering tools.

When a team of computer scientists at Lawrence Livermore National Laboratory's Conflict Simulation Center faced the task of developing a multiuser, interactive graphics program for training officers in strategic operations and military tactics, they looked for a tool that would automate systems analysis and design.

Computer scientist Sara M. Hilbert, system designer for the project, said the team wanted a tool that was easy to use and offered consistency checking. Comprehensive data-flow diagram support and strong communications capabilities also ranked

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SOFTWARE & SERVICES

Software speeds war games task

high. After considering various micro- and minicomputer-based solutions, the project team agreed to beta-test Teamwork/SA, a workstation-based environment for systems analysis from Cadre Technologies, Inc. of Providence, R.I.

The software retails for $8,900 per node and was designed to run on Apollo Computer, Inc. workstations.

The three-year project focuses on developing an analysis capability for examining the problems that arise at the corps level, simulating not only the physical events and weapons effects of ground combat with close air

support but also including mechanisms to reflect decision and planning considerations. "The program is extremely complex because a lot of functions have to be integrated and coordinated together," Hilbert said.

Simulations involve close combat, aviation, fire support, intelligence, electronic warfare, combat service support, communications and air defense over highly detailed digitized terrain. Trees, rivers and hills are painted on high-resolution screens, and players at terminals can zoom in and out quickly between an entire battlefield and a 10-meter square on that battlefield showing one tank unit.

Distributed VAX

The target hardware to run the combat-simulation software is a Digital Equipment Corp. VAX 8800.

Though Hilbert said no decision has been made, the odds are high that the completed war games will run on a distributed VAX architecture.

Since the development team consists of computer scientists, military research associates and management from different backgrounds, clear and concise communication is essential, especially in the specification and design stages. "A lot of what goes into a system during the specification period determines how fruitful it will be," Hilbert said.

A structured analysis tool such as Teamwork/SA is a means for the various parties on the team to document the function of the system according to the way data flows through it, showing how that system will actually perform. The systems analysts can use it to coordinate the many portions of the programs involved in the

overall system to ensure it will work as intended when the development is finished.

Hilbert explained that when analysts meet with users to define system requirements, graphical representations can be quickly understood by both sides and instantly changed during the specification process. This helps to clarify the purpose of the program from the start, reducing redesign requirements and speeding the completion of the system.

Data-flow diagrams

One of the most observable benefits of using Teamwork/SA involves the creation of data-flow diagrams. Hilbert said the product automates the generation of data-flow diagrams, freeing the analysts from tedious manual redrawing with pencils and templates. The graphics screen becomes the equivalent of an electronic scratchpad, automatically recording ideas as program developers and systems analysts explore and restructure software. This allows them to focus on the actual system engineering. Programs are retained in a data base and can be used later to modify and maintain code.

Gains are achieved in both productivity and program quality, she said, because work not only goes faster, but changes are more thorough and made at deeper levels. "Integrated access from data-flow diagrams to the data dictionary makes model development, revision and review simpler," Hilbert said. The data dictionary can be accessed at any time from any part of the program.

Hilbert said that syntax and consistency checking are critical to the project, since hundreds of model elements are entered. With automated checking, problems are more quickly located and fixed. She added that even with a time-consuming manual check, the team never could find all the errors the automated checking function can.

Mouse-and-icon approach

The user interface employs a mouse-and-icon approach, eliminating time-consuming keyboard input and allowing a faster, more intuitive approach to development, Hilbert said. Pull-down windows and multiwindowing capabilities afford quick access to several parts of the project model at any time. "The ability to see four or five drawings of parts of a system simultaneously helps in seeing their interrelationships," Hilbert observed.

Hilbert used a standard vocabulary, achieved more easily through icons, makes uniformity of definitions possible, speeds training and reduces misunderstandings between developers. "The graphic orientation clarifies communication by minimizing the use of English," she said.

A common data base allows authorized users multiple, simultaneous access to any part of the program, facilitating team management and speeding program development. Communication problems during a software development project can significantly delay its completion.

Hilbert said the use of structured analysis in the early stages of a project yields downstream savings. "Improved communication, combined with the automation of systems analysis, leads to better overall specifications. Productivity gains are most evident when it comes to debugging and installing the system."

4GLs drawing bead on PCs

taken to mean that the fourth-generation languages' war with Cobol is near an end. The arrival of PC-based fourth-generation languages still leaves unanswered the languages' need for portability, greater speed and usefulness outside the world of report generation.

It is in these areas that the next development in fourth-generation languages will take place.

The fourth-generation language is popular for economic reasons. Software development costs, which are labor costs, now often eclipse the expense of a system's hardware. The

solution, of course, has been to convert to fourth-generation languages for program development. The language in effect relies on relatively cheap hardware power to overcome the relatively expensive cost of Cobol programmers. With a fourth-generation language, a savvy end user can do mainframe programming.

The programs that result, however, have grave limitations. According to Paul Tinnirello, manager of data services programming at A.M. Best Co. in Oldwick, N.J., fourth-generation languages "lack the speed for use in high-volume" systems.

Fourth-generation languages also lack good debugging tools and portability, Tinnirello said. Perhaps most important, they do not address the fact that the user often already has a fleet of Cobol programs, all of which must be maintained and updated.

Because of these reasons, "people aren't going to flush their Cobol systems down the drain" in deference to fourth-generation languages, Tinnirello observed. At least, not yet.

There is on the horizon a new breed of fourth-generation language that combines the best of Cobol with the best of the language — and with a dose of artificial intelligence added for ease of use. While fourth-generation language users have for some time been adding patches of Cobol to their programs wherever they want speed or greater sophistication, these new languages will not need patching. They will simply be faster products. Such products will be "a likely extension of existing 4GL products," said IDC's Rinaldi.

When those products arrive, users will have the best of both worlds for a change.

Adabas delay irks some users

base management system, admitted they were willing to wait until the product was ready.

"I know that Software AG doesn't move quickly on its releases, but when the product comes out, it's usually very sound," said Howard Robinson, of PVA-EPVA, Inc. in Wilton, N.H.

A fund-raising organization for paralyzed veterans, PVA-EPVA uses an IBM 4381 and a 4341 for producing its mailing lists and donor records. Because the company runs 100,000 transactions a day against several million records, "our biggest problem is performance," he said.

At the Utah Department of Employment Security, employment records are now stored on VSAM files. With the added capabilities and increased performance of Adabas Release 5, Steven Larsen is hoping he will be able to store data about job applicants and unemployment recipients in one place. "I'm looking forward to being able to create data definition models across files," he said.

Sea-Land Corp. of Elizabeth, N.J., currently uses Software AG's Adabas as the DBMS for its human resources and sales and marketing applications. According to Robert Ranalli, the worldwide container company executes more than 10 million commands a day on Adabas running on an IBM 3090, 3081 and 3083.

With the new release's multiple thread or update capabilities, Ranalli said he hopes to remove the processing bottlenecks.

Performance improvements are also important to Sea-Land. "We have some huge files the size of two 3380s. Loading them can take a couple of hours. A 25% to 40% gain in load time means a lot, particularly when it comes to maintenance. It could cut downtime by as much as an hour, and that makes me look good."

Notes: Israeli firm to sell tool in U.S.

company will continue to enhance and support its COS operating system, according to John A. Rollwagen, chairman.

□

Another contender for sales of IBM mainframe production control systems is about to offer its product in the U.S. **4B Software,** Ltd. of Tel Aviv, will market its **Control-M** system, which it says dominates the Israeli market. It is in the process of choosing a U.S. base of operations.

□

Multi Soft, Inc. of Basking Ridge, N.J., signed a letter of intent with **Dun & Bradstreet Corp.** to execute agreements on its **Super-Link** product. Company officials claim Super-Link allows micros to process on-line applications independently with mainframe hosts, allowing a programmer on a micro to develop screens, field validations and message handling for the application and off-load those tasks from the host.

SYSTEMS & PERIPHERALS

INSIDE

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NEW THIS
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■ Texas Instru-
ments an-
nounces a Tem-
pest version of
its Explorer
LISP-based sys-
tem

■ For more on this and
other new products, see
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INSTANT
ANALYSIS

HARD TALK
James Connolly

Translating
vendorspeak

P ity the DP manager who has to
ask a question of the new breed
of computer sales representa-
tives, the marketing type who works
for a company that makes supercom-
puters, minisupercomputers, massively
parallel computers and whatever else
the so-called next-generation comput-
ers may be labeled.

As valuable as those machines may
become as they make their way into the
commercial DP world and as well as a
computer scientist may understand the
technology, one strike against these
computers is that vendors cannot or
will not explain them in terms under-
standable by the vice-president of MIS
who has to budget for the system.

The firms to be wary of are the start-
ups and even some established compa-
nies exploring new markets. They and
their marketing representatives are car-
ried away with the black box concept.

Here are some examples of questions
that one might ask of these vendors and
their typical responses:

What is the operating system?
"There isn't one."

Then how are data, instructions and
peripherals managed? "The machine
does it."

How? "It's a truly unique approach,
but we can't tell you how it works
because it's proprietary." (The transla-
tion is, "Darned if I know.")

What sort of applications do you
expect your customers to run? "They
can solve problems they previously
thought were unsolvable."

See TRANSLATING page 26

*Connolly is Computerworld's senior
editor, systems & peripherals.*

Datapoint expands Starfleet

Diskless PC processor,
file server, printer added

By James A. Martin

SAN ANTONIO — Datapoint Corp. re-
cently announced a host of products for its
fledgling Starfleet office automation line,
including a diskless personal computer ap-
plications processor, an IBM Personal
Computer AT-compatible file server, a la-
ser printer, a communications server and
two high-speed modems.

The products are aimed chiefly at Data-
point's installed base of customers, said
Jim Rutledge, senior director of product
marketing. In addition, they are designed
to enhance further the availability of
products operating on the company's At-
tached Resource Computer (ARC) local-
area network and proprietary operating
systems, its DOS and the more recent Re-
source Management System (RMS).

"Our strategy is to provide the installed
base with higher performance products at
a lower cost and, at the same time, ensure

compatibility with existing Datapoint sys-
tems," said Edward F. Gistaro, Datapoint
president and chief executive officer. "We
have to take care of the customers that
have hung with us through all this time as
well as look to the future," Gistaro told
Computerworld recently.

Datapoint is positioning the Starfleet as
its flagship product line. The first of the
series, the 16-bit processor Starship I, was
introduced last September, allowing users
to run applications under both RMS and
DOS. Starship II, due out later this year,
will include hardware and software inter-
faces to Microsoft Corp.'s MS-DOS and
Unix [CW, March 31].

The recently announced products, all of
which are available now, included the
Deskstar, an Intel Corp. 80286-based 16-
bit applications processor that provides
2M-bytes of internal memory, expandable
to 4M bytes. The Deskstar is essentially a
diskless personal computer that acts as a
single-user workstation on an ARC net-
work for Datapoint's Pro-Vista line of pro-
prietary office automation software.

See DATAPOINT page 30

Less is more: Early user finds DG's
smaller mini faster, easier to install

By Donna Raimondi

PEAPACK, N.J. — A company that
planned to purchase Data General Corp.'s
MV/4000DC minicomputers has discov-
ered that the smaller DG MV/2000DC is
faster, more powerful and much cheaper.

The MV/2000DC — DG's answer to Dig-
ital Equipment Corp.'s Microvax II super-
micro — is out of beta testing and ready to
go. The system is simple to install and use,
says Luciano Corea, vice-president of of-
fice information systems at Beneficial
Data Processing Corp in Peapack.

"We have had a beta system for one and
a half months or so," Corea says. "About
the biggest difference we find is that the
4000 has more ports. But with the same
5M bytes of memory, 120M bytes of disk
space and fully laden — the 4000 with 32

ports, the 2000 with 24 ports — there is
about a $10,000 difference in price."

Corea's company provides all data pro-
cessing services to its parent, Beneficial
Corp. The DP unit is installing five of the
new systems in five locations around the
U.S. and in England. This is part of an or-
der for 21 MV/2000DCs that the parent
company placed in November when the
system was announced.

The staff that is tapping into the
2000DCs are novice computer users, Corea
says. They range from a senior vice-presi-
dent to administrative assistants. "Where
it is cost-justified, we will put everyone on
CEO," he says. The company has an inde-
pendent firm conducting a study to deter-
mine dollar savings that can be realized be-

See USER page 29

"Unix is Cobol
one more time. It
isn't as portable
as people think."
— Richard A. Cortese,
president of
Alpha Microsystems,
on why his company
favors a proprietary
operating system
over Unix

Zenith displays flat CRT, claims significant advances

By David Bright

SAN DIEGO — A new flat CRT technology from Zenith Electronics Corp. reportedly offers up to 80% more brightness and up to 70% better contrast than conventional CRTs.

At the Society for Information Display's annual symposium, held recently, Zenith scientists demonstrated their patented flat tension mask (FTM) tube and released some details of the technology.

Executive Vice-President Karl Horn claimed that the tube represents "the most significant development in display technology since the color picture tube."

Offered to OEMs

The FTM tube will initially be offered to OEMs in a 14-in. version to be shipped in 1987. According to

Horn, the product will be priced competitively.

Both the FTM tube and conventional color CRTs use a thin metal shadow mask with hundreds of thousands of perforations to direct beams from the tube's electron gun to the screen.

In Zenith's FTM tube, the shadow mask is stretched flat and held under tension directly behind the tube's flat glass faceplate. Unlike the shadow mask in conventional CRTs, the new tube's mask does not move under most display conditions, according to Horn.

In addition to increased brightness and contrast when compared with conventional CRTs, the FTM tube is said to provide increased resolution, sharper color fidelity and glare-free viewing.

Kowin system links desktops

Multiuser net offers voice connections for Apple Mac, IBM PC

By Peggy Watt

MONTEBELLO, Calif. — A multiuser desktop computer system with integrated voice connections that can incorporate IBM Personal Computers and compatibles, Apple Computer, Inc. Macintosh computers and other common systems into its network is testing the waters for a customer release.

Kowin Computer Corp.'s Kowin Office features three types of desktop units, varying in sophistication, and can accommodate other vendors' desktops into a turnkey network that includes electronic mail, file sharing, menu pad, calendar and other multiuser utilities. Each workstation includes a standard telephone with a speakerphone and a 300 and 1,200 bit/sec. modem and can be autodialed from the on-line directory.

The software, developed by Kowin and Quadratron Systems, Inc. of Encino, Calif., is based on the Regulus multiuser, multitasking operating system, an AT&T Unix System V-compatible program, and runs compatible application software, according to Kowin representatives.

When microcomputers are attached to the network, they can use the same network utilities but retain stand-alone functions, said Stan Bour, Kowin vice-president of engineering. However, the distinctive Macintosh user interface disappears under the Kowin network, and a microcomputer user loses the autodialing feature.

Kowin is also soliciting value-added retailers and value-added dealers, Bour said. The company said the system will be on the market in July.

Its primary unit is the File Server Graphics Workstation, with three 32-

bit Motorola, Inc. 68000 processors running at 10 MHz — one each for the operating system, applications processing and workstation processing; 1M byte of random-access memory (RAM), expandable to 4M bytes; a 20M-byte hard disk drive; and options for as many as three external hard disks and a 20M-byte tape backup. It uses 1M-byte, 3¼-in. floppy disk drives.

The operating system processor has 1M byte of main memory and 64K bytes of programmable read-only memory (ROM). The server has four RS-422 Kowin Network ports, which can connect up to 16 workstations for a maximum configuration of 64 users, though six to eight users per file server is optimum, Bour said.

The other two Kowin desktop systems, the Office Graphics Workstation and Executive Workstation, each contain a 68000 microprocessor, 16K bytes of RAM and 32K bytes of programmable ROM. The graphics workstation features a black-on-white, 12-in. bit-mapped graphics display screen, as used in the Macintosh.

The Executive Workstation is a smaller, transportable one-piece unit with 128K bytes of display memory, a 25-line, 80-character, 9½-by-3¼-in. LCD, measuring 640 by 200 pixels.

Both workstations also have two RS-232 serial ports.

Basic retail price for an eight-user configuration of the Kowin Office is $13,955, which includes one File Server Graphics Workstation with a 20M-byte hard disk drive, single 1M-byte floppy disk drive, 1,200 bit/sec. modem and the operating system plus seven monochrome workstations. The company said that the cost to a dealer is $7,820.

Translating vendorspeak

Where will they get the software? "We expect a third-party market to develop as people realize how great the machine is, with some of our customers being able to sell their own applications once they write them." (The translation this time is, "Drop back 10 yards and punt.")

It has become obvious that in too many cases the point people for these vendors don't understand the technology themselves. And the researchers are content to design machines for other deep-pocketed research customers who experiment with applications that never go into production. The inventors bring in marketing folks to hit the commercial market with promises of "the fastest computer ever built at a cost of only $XX million."

The problem is that few firms can kiss off that $XX million in the hope that at least one of the dozen "next-generation" vendors are the second coming of Cray Research, Inc. The Cray-1 came out without software, which came later as Cray established its market. If a buyer is to gamble that another start-up can be another Cray, that buyer at least deserves the courtesy of straight answers.

The answers to these two questions will lead you to one modem.

Introducing the Codex 2680.

It's the thoroughbred of 19.2 kbps modems. The superior performance of the Codex 2680 is achieved by utilizing enhanced 64-state 8-dimensional Trellis Coded Modulation (64 x 8 TCM), enabling Codex to position error-correcting data in a smaller signal constellation, thereby making it less susceptible to line disturbances.

In actual use the Codex 2680 delivers 99.9% error free data over more than 90% of standard 3002 D1 conditioned lines at 19.2 kbps.

The big payoff.

Speeds of 19.2 kbps allow you to realize dramatic increases in efficiency and productivity. Without increasing expenses or staff resources. And these savings add up. Fast. With its standard 2-channel multiplexer, you can eliminate extra lines. For example, by combining two separate 9600 bps circuits into one leased-line at 19,200 bps typical savings for a New York to LA link are greater than $24,000 per year.*

What's more, the Codex 2680 offers complete network management capabilities for monitoring and fault isolation. It can operate independently or with your central site Codex network management system, to ensure greater network availability. In short, it's a modem that's really a true network system resource.

It's all perfectly clear.

Another important feature of the Codex 2680 is the fact that it is shipping right now. Not tomorrow. Now.

If you still have questions or would like a product demonstration, simply call **1-800-426-1212, ext. 227.** Or write Codex Corporation, Dept. 707-227, 20 Cabot Blvd., Mansfield, MA 02048.

The new Codex 2680 19,200 bps high speed modem.

The quicker you do it, the faster you'll be achieving what you really want out of a high speed modem. Performance.

SYSTEMS & PERIPHERALS

IBM adds VM drive support, graphics system printer, Series/1 net tools

By James Connolly

WHITE PLAINS, N.Y. — Increased support for its 3380 dual-density disk drives under VM was among a series of product and enhancement announcements made recently by IBM.

In addition to the VM/XA SF Release 1 DASD enhancements, IBM announced its 5087 Screen Printer for the IBM 5080 Graphics System, IBM Series/1 network management tools and limited service support for non-IBM personal computer products.

The DASD enhancements reportedly provide guest virtual machines full-function, shared support of 3380 E model disk drives and guest use of 3880 Model 13 and Model 23 controllers.

IBM said the guest machines are provided with full-pack mini-disk sharing support for DASD dump and restore, the ability to use extended count key data channel command words and the use of read device characteristics channel command words. The enhancements will be provided on a program update tape late in 1987, according to IBM.

Wang group starts service

DEKALB, Ill. — A 1-year-old Wang Laboratories, Inc. users group has announced an on-line information service to provide subscribers with data bases of software and with capabilities for electronic mail, public forums and opinion polling.

WUSA/On-Line, sponsored by the Wang Users Society of America, will operate as a special interest group on Delphi, a videotex service of General Videotex Corp. of Cambridge, Mass.

Information is available about Wang's Office Information System, VS and Personal Computer systems.

WUSA officials said the service will save users the cost of support by allowing them to get assistance from other users. A Delphi subscription costs $24.95 and includes a Delphi instruction book and three non-prime-time connect hours.

The screen printer is designed for high-resolution, seven-color or monochrome production on A-size or A4-size paper or A-size transparency.

It connects to the video interface of a 5085 Graphics Processor or a 5081 Display. IBM said a single-copy color output takes about 65 seconds to process, and a monochrome copy takes about 30 seconds to process. The printer costs $5,500 and will be available late this year.

The Series/1 announcements included the Series/1 EDX Network Definition Utility Version 1 and the EDX Primary SNA Version 1. The products are corequisite.

The definition utility was designed to provide a user-friendly method of defining the network resource config-

uration records used to define EDX Primary SNA Networks.

EDX Primary SNA Version 1 is said to support the IBM 3651 and 3684 controllers and the IBM 4680 Store System Controller. It provides physical unit (PU) Type 4 and PU Type 5 images to downline PU Type 2 controllers but is not attachable as a PU 4/5 type to a host. The

EDX Network Definition Utility Version 1 costs $1,950, and the EDX Primary SNA Version 1 costs $2,995.

IBM also announced that its National Service Division service representatives will now be able to remove or disconnect from a personal computer a non-IBM machine or feature that has been diagnosed as causing a system or machine failure.

Announcing TI's Second Satellite Symposium: A To Getting Started.

SYSTEMS & PERIPHERALS

User says mini offers more

cause of Beneficial's 1,200-node, worldwide network running DG's Comprehensive Electronic Office (CEO) integrated office system. The network now includes 12 MV/4000 superminicomputers and one MV/4000 minicomputer.

The networked systems are linked with DG's Zodiac communications software by dedicated leased lines to approximately 16 remote locations. Two of the new systems will be configured with 24 ports, the maximum num-

> *'I suspect this type of system is the machine of the future.'*
> — Luciano Corea
> Beneficial Data Processing Corp.

ber allowed, and the others will have 12 ports each.

Users are currently being trained in an extensive program of formal hands-on training, Corea says. "If they don't go through the training program, they don't get a

user ID," he says.

The only problem Corea had with installation was that it looked too easy. "If you have a technical background, you think it's too simple to be real," he says. "You hook terminals up,

start it up and say 'enable,' and then you don't have to tell it anything. A special cable determines intelligently what communications protocol it is hooked up to."

A menu of prompts walks the installer through the process, and if the user cannot make decisions, the system makes a decision for him through a series of defaults.

The system has two batteries that power clock and date time, so if the system is turned off, those two bits of information do not have to be reset. Each time the system is turned on, it runs a total hardware self-check to make sure all is working well.

Part of the reason the system is so simple to install is Corea and his staff asked for a lot of simple user-interface menus when they were the beta test site, he says.

DG wanted a machine users could install and maintain, so Corea's people suggested changes to make that process possible. DG then revised the original AOS operating system to Revision 7.

"I suspect this type of system is the machine of the future," Corea says. "It is small, has 1 million instructions per second of power, and the cost/performance ratio has got to obsolete other larger modes. I can't see buying a 4000 anymore."

He points out that the cost per user, although he has not figured it out to the dime, falls somewhere in the $2,500 to $3,000 range. "That is a far cry from even two years ago," he adds.

SYSTEMS & PERIPHERALS

Southern Systems offers nonimpact printer for minis and mainframes

By David Bright

CLEARWATER, Fla. — Southern Systems, Inc. has introduced a $59,860 nonimpact page printer that prints 80 page/min and is intended as a cost-effective replacement for traditional impact printers.

According to company officials, the IBM plug-compatible 1080's operates at three times the speed of traditional impact printers.

Most nonimpact printers in this speed range come from Xerox Corp. and generally cost about $200,000, noted Jonathan Dover, president of Datek Information Services, Inc., a Waltham, Mass.-based printer mar-

ket research company. The printer is also said to be compatible with all popular minis and mainframes.

Like Southern Systems' 60 page/min printers, the Mercuron 1/80 is based on a Delphax Systems, Inc. iondeposition engine.

The Mercuron 1/80 reportedly offers a monthly duty cycle of 500,000 pages at a cost of about one cent per page. It uses 8½ by 11 in. and 8¼ by 14 in. cut sheet paper. Features include automatic forms creation with a round-corner capability and allpoints-addressable graphics.

Deliveries are scheduled to begin this month.

Datapoint adds to its Starfleet

"This allows the user to run more power on the desktop in memory and processing, with prices that are competitive with personal computers," Rutledge said. The Deskstar comes with either the DOS or RMS operating systems. Datapoint's DOSgate software system, released last year, provides an interface between the two.

"With the Deskstar's improved ergonomic design and memory capabilities, we are able to move the 286 processor further into the heart of our product line," Rutledge said. The Deskstar is an enhancement of Datapoint's 8400 processor, released in

May 1984, and utilizes the 80286 chip, he added. The Deskstar sells for $3,995.

Datapoint also announced the Stargate communications server, which is a synchronous communications controller designed to link Datapoint systems with IBM's and other vendors' systems through IBM's System Network Architecture (SNA), CCITT X.25 and the International Standards Organization Open System Interconnect standard.

The Stargate SNA/Synchronous Data Link Control gateway software enables BMS ARC users to access IBM 3270 and 3770 data communications facilities. The hardware component is a Motorola, Inc. 68000-based microprocessor that attaches directly to an ARC network.

The Starserver offers 19.2K bit/sec. transmission for medium to large networks and can off-load processor-based communications functions on an ARC network, freeing up previously dedicated workstations. Rutledge added. The gateway system software retails for $2,750, and the server hardware costs $3,500.

The Starserver 10 is an IBM Per-

> *Datapoint Corp. is positioning the Starfleet line as its flagship product.*

sonal Computer AT-compatible file server running MS-DOS but was designed to work as a file server in small data entry and distributed data processing networks running Datapoint's DOS.

Priced at $11,496, the Starserver features an 80286 16-bit CPU, 512K bytes of main memory, 4M bytes of cache memory and 80M bytes of fixed disk storage, expandable with an optional expansion disk unit.

Also included is a monochrome 14-in. monitor displaying 80 char. by 25 lines, MS-DOS and Starport DOS volume server and user diagnostics software. The Starserver system is priced at $11,496.

Datapoint also announced its first desktop laser printer, the Starbeam, priced at $2,400. The printer operates in ARC networks or in standalone environments, supports RMS-based office automation software and is compatible with Datapoint's Starport processor.

Starbeam prints 8 page/min and features a dry monocomponent electrographic printing method and Courier 10 typeface in normal, bold, italic and footnote fonts. An RS-232C interface allows up to 9.6K bit/sec. transmission rates.

The Race I and II modems, which Datapoint offers under a third-party agreement with Data Race, Inc., reportedly provide error-free transmission with data rates from 1,200 to 19.2K bit/sec. full duplex.

The Race I features automatic dialing, adaptive line equalization and alternative AT&T 103J mode of operation, and the Race II offers the same features along with the ability to statistically multiplex a second, independent printer channel with the primary terminal channel on the same dial-up line.

The Race I retails for $1,496 and the Race II for $1,695.

MICROCOMPUTERS

Resolving the pop-up conflict

Whenever software developers say they're hammering out some guidelines for applications, the rest of the industry looks on with skepticism. Developers are here on this earth to provide diversity rather than standards, and they don't share much beyond a fondness for specialized puzzles.

But earlier this month many faced such a puzzle together, gathering at Colorado Springs, Colo., to work on ground rules for random-access memory (RAM)-resident software. (Originally called "pop-up programs," RAM-resident packages now often travel under the graceless name of "Terminate-Stay Resident" software.)

No one quarrels with the goal of making RAM-resident packages, like Borland International, Inc.'s Sidekick, work more smoothly with other software.

These programs, which hang around in internal memory while a main application is running and supplement it with all sorts of handy little tricks, have skyrocketed in popularity. But they're often unwilling to run with each other or with primary applications — arguing and crashing over memory allocation and keyboard input and anything else they can find to fight about.

Underlying the problem are the usual compatibility culprits — overall weaknesses in the Microsoft Corp. MS-DOS design environment (particularly the lack of multitasking capabilities)

Bender is Computerworld's senior editor, microcomputers.

Kenbak-1 enshrined as world's first commercial PC

By David Bright

BOSTON — A vintage-1971 Kenbak-1 personal computer with 256 bytes of memory won the Early Model Personal Computer Contest held last week at The Computer Museum in Boston.

The contest was staged to help the museum trace the history and development of personal computers before some of the machines become extinct.

Apple Computer, Inc. co-founder Steve Wozniak was a judge at the contest, which was sponsored by CW Communications, Inc. and Computerland Corp. After the announcement of the contest winner, Wozniak gave a talk about his electronics background and the early days at Apple.

Of the more than 320 entries received from 13 countries, 190 finalists were chosen. They will remain on permanent display at the museum. The selection criteria

Steven Wozniak

were significance, rarity, date and completeness. "We rejected 138 PCjrs," Wozniak joked.

Built by the Kenbak Corp. with a retail price of $750, the Kenbak-1 used eight data buttons for input and eight lights for output. Intended for the educational, rather than the more popular hobbyist market, only 40 Kenbak-1 machines were sold during their two years on the market. The machine's inventor, John Blankenbaker, later designed Symbollex, Inc.'s first artificial intelligence system.

The following were the four runners-up: the Micral, a commercial model built in France in 1973; the TVT-1 prototype, the first personal computer able to display text on a screen; the VDM-1, a memory-mapped video display generator for S-100-based systems, and an MITS

Pros wary of 'desktop publishing'

Initial acceptance could result in bad graphics flow

By Peggy Watt

ATLANTA — As Apple Computer, Inc. and a growing throng of developers declare that everyone with a microcomputer can be a publisher, the business world should brace for some horrendous graphics from overzealous amateurs, publishing professionals warned late last month at Comdex/Spring '86.

"Remember when the Macintosh first came out and we all got MacMoned to death?" asked consultant Frank Romano. At that time, delighted users crammed as many different Macintosh fonts as possible onto a page. That scenario will only get worse if IBM Personal Computer users all fancy themselves publishers, he said.

"We're in for a baroque period of graphic design," with graphically poor page layouts, wanton font mixing and design created under unskilled eyes, consultant Jack Powers predicted.

"My guess is people will begin to learn to use the tools, though most people are horrible designers and will never learn," Powers added. He suggested substituting artificial intelligence-aided design programs and emphasizing default choices.

The publishing professionals winced at the term "desktop publishing."

"There's no such thing as desktop publishing. It doesn't mean anything," Romano

MICROCOMPUTERS

Gambling on software success: Mixed prospects for start-ups

Success requires enhanced products

By Douglas Barney

Javelin Software Corp., Ansa Software Co. and Symantec Corp. were last year's three most visible microcomputer software start-up firms, breaking into an intensely competitive market. Industry observers still hotly debate these firms' chances for success.

"It is very difficult to break into the market with

productivity tools. You need a significant enhancement to a productivity tool to give it an advantage against existing software," Alan Hald, chairman of Microage Computers, Inc., notes.

Some of the start-ups themselves attest to the difficulties. "A lot of people said we would be dead by now," acknowledges Steven Dow, president of Ansa, which continues to brave the critical.

Javelin had a similar experience. "When we started the company, everybody told us

it was impossible," says Christopher Herot, vice-president of engineering for Javelin, which began shipping its software last October.

"We were the last three companies to enter the market before the gate shut," Herot remarks. He argues that firms such as Ovation Technology, Inc., which raised millions and failed to deliver a product, scared off many investors. "Four or five years ago all you had to do was photocopy a few pages of a manual and write a schlocky program."

Symantec Executive Vice-President Rod Turner agrees. "I don't think the gate shut, but there aren't going to be too many companies that will join the fray and be successful."

All three firms are currently showing signs of success, with products in the top 10 of the Softsel Computer Products, Inc. Hotlist. In fact, Ansa expects to recoup its total investment this year.

Opportunity for innovation

Softsel co-chairman Bob Leff calls all three products "enormously successful" and disagrees that today's market is highly difficult for new start-ups. "There is still enormous opportunity for innovation." But he adds that "it is not the same as it was three years ago."

Symantec's Turner claims to have sold some 15,000 copies of Q&A, while Ansa and Javelin refused to give sales figures. Ansa is currently selling some 400 to 500 units per month to end users through high-end computer retailers, and Javelin is selling some 200 to 250 units per month, estimates Bob Lefkowits, vice-president of software research for Inforcorp.

Nearly all agree that the difficulties start-ups faced last year have multiplied. "The only viable alternative now is to get a Lotus or an Ashton-Tate to distribute the product," Herot says. Javelin recently reached an agreement under which Ashton-Tate will distribute Javelin to international markets, and Herot expects that to account for a significant portion of Javelin's sales.

Some critics believe that Javelin and Ansa, in particular, have priced their products too high. Amy Wohl, in the latest "Wohl Report on End-User Computing," a monthly newsletter, believes that Paradox and Javelin are "snazzy but still overpriced newcomers" that will have to come down in price "before reaching price-performance parity with competitive data base and spreadsheet packages." In fact, Ansa is already offering a $100 rebate on Paradox purchases.

While each firm targeted different markets, they all positioned themselves for head-to-head competition with existing vendors. They are being judged on success relative to the competition, rather than on sales alone.

"All three have very heavy venture capital investment, and as a result it is not enough for them to become modestly successful in software companies," says Jeffrey Tarter, publisher of "Softletter," a Cambridge, Mass.-based newsletter. "They were set up by venture capitalists who expect big market

shares and big sales volumes."

Javelin introduced a financial analysis package that butted heads with Lotus Development Corp.'s 1-2-3, and while Javelin hasn't displaced Lotus at the top of the best-seller charts, the firm claims demand has grown steadily.

"Everybody has a spreadsheet. We are selling to the people that have run out of gas with their spreadsheet," Herot says.

Symantec launched Q&A, an artificial intelligence-fla-

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Iomega uncrates high-end storage system, cuts prices

Targets networking, printer applications

By Peggy Watt

ROY, Utah — Iomega Corp. released the Bernoulli Box Plus, a high-end mass storage system aimed at networking and high-storage applications, and cut pricing up to 26% on all disk cartridge subsystems.

The Bernoulli Box Plus is an 80M-byte external hard disk drive with two removable-cartridge 20M-byte drives. The cartridges support back-ups and can be read from or written to directly.

Pricing starts at $5,995 for the enhanced hard disk, which comes with Q-DOS, file management software from Gazelle Systems of Provo, Utah; archival backup software; and a host adapter card for use with the IBM Personal Computer AT and compatible systems.

Iomega is aiming the Bernoulli Box Plus at such high-capacity uses as computer-aided design and desktop publishing, according to Tim Orsley, product manager. The storage devices also support major IBM PC-DOS networks, including PC Network and the Token-Ring network, and Novell,

Inc.'s Netware systems.

"We consider ourselves competition to tape backup systems, because the removable cartridge drives are a means of additional on-line storage as well as backup," Orsley said.

In addition, the storage system offers the "journaling" feature of storing often-used programs and information together and then will keep frequently accessed data from separate applications on various cartridges, which may be plugged in as needed, Orsley said.

Its working backup feature eliminates the system's allowing random access to backed-up data in the cartridges. The file manager can provide a complete inventory of files as divided into subsections by the user.

Orsley said that the product may compete against the original Bernoulli Box, which received an early boost as an alternative to the initially trouble-ridden hard disk system in the IBM Personal Computer AT. However, between high-storage application areas and network storage, Iomega is "playing with a wide variety of markets," he said.

Announced last week, the price cuts on disk cartridge subsystems were effective immediately. Cost of the 10+10 Bernoulli Box dropped from $3,595 to $2,895.

Board provides EGA overlays

By Douglas Barney

WASHINGTON, D.C. — U.S. Video late last month announced its RM-110 Video Overlay board, which the firm claimed is the first product to provide video overlay for the IBM Enhanced Graphics Adapter (EGA) and compatible boards. The $980 product can support computer training, video data bases and other interactive applications.

"There are several overlay boards or systems on the market today, but U.S Video has the only one available to people who want to use their own software. Our competition requires the user to use their software," said George Wheelock, director of marketing for U.S. Video. "We have made our board as open as possible."

According to the firm, the RM-110 brings EGA graphics and text together with full-color, high-definition video images. These previously incompatible images can be shown at the same time on a single monitor, in either opaque or transparent super-

imposed mode, or can be keyed to any color provided by red-green-blue monitors.

With color keying, users can create video windows with the help of windowing programs such as IBM's Topview and Quarterdeck Office Systems, Inc.'s Desqview.

Output from a television tuner, laser disk, videocassette recorder, video camera or any other National Television Standard Code (which is the output from most video devices) output device can be displayed on a portion of the screen using popular graphics software packages.

RM-110 includes an on-board laser-disk controller circuit that allows access and control of up to 500 bytes of stored images, or 30 minutes of real-time action video on each side of a 12-in. laser disk. The product also includes support for animation and monitor cables.

Available now, the RM-110 runs on IBM and compatible personal computers.

Borland's Turbo Prolog hits market

SCOTTS VALLEY, Calif. — Borland International, Inc. last week began shipping Turbo Prolog, its $99.95 entry into the artificial intelligence language market.

Borland founder and President Philippe Kahn said that Turbo Prolog will be implemented on other systems, including mini and mainframe computers, a new approach for Borland.

The firm also announced a price

hike for its relational data base, Reflex, The Analyst, to $149.95 effective May 15. It was introduced by Borland at $99.95 after the company acquired the original publisher, Analytica Corp., of Fremont, Calif.

Borland also disclosed the availability of file format specifications for data base files built with Reflex. The company also promised that at least one Reflex add-on product will be announced this summer.

MICROCOMPUTERS

Statistical analysis package debuts

Allows expert, graphic modeling

By Stanley Gibson

CORVALLIS, Ore. —
Called "a word processor for
numbers" by its developers,
Point Five is a statistical
analysis software package
for personal computers re-
cently introduced by Pacific
Crest Software, Inc.

The $195 program is in-
tended for market research-
ers, strategic planners, engi-
neers, sociologists,
psychologists and others
who use quantitative analy-
sis for numerical and graph-
ical modeling.

"Point Five lets users
structure a problem one way,
take a look at the results and
then restructure it quickly
for a different type of analy-
sis," President and founder
of Pacific Crest, Dan Apple
claimed.

Spreadsheets inadequate

Apple also suggested that
conventional spreadsheet
programs are inadequate for
many in-depth analysis
tasks. "We created Point
Five to overcome users' frus-
tration with the cumbersome

mechanics, limited function-
ality and confining struc-
tures of conventional com-
puter programs," he said.

At its simplest level, Point
Five operates as a program-
mable calculator with 150
built-in mathematical, finan-
cial, statistical and data ma-
nipulation functions, such as
standard deviation, returns
on investment and amortiza-
tion.

In addition, the built-in
functions can be used as a
fourth-generation program-
ming language by experi-
enced users, according to Pa-
cific Crest.

Apple, who originally con-
ceived of the program as an
aid to cities and towns in
planning municipal services,
is optimistic that govern-
ments and universities will
be particularly receptive to
Point Five.

'A well thought-out package'

"It's a very well thought-
out package," noted Bob
Mayhew, senior ADP manag-
er with the University of Cal-
ifornia at Riverside. Mayhew
said that he was impressed
by the flexibility and power
of the program when he saw
the Point Five package dem-
onstrated.

The university will pay
Pacific Crest a site license fee
for $1,800 and will use the
program in statistics classes
as well as for its own organi-
zational planning needs.

Another user, John Jack-
son, an operations analyst
with Food Machinery Corp.
in San Jose, Calif., said, "Be-
fore, I would have picked up
a calculator and a scratch
pad."

Used for number crunching

Jackson said he has been
using Point Five on a steady
basis for the past six months,
mainly for number crunch-
ing. Jackson also claimed he
has found the software par-
ticularly useful because he
can write his own programs
with it.

Point Five runs on IBM
Personal Computers and
compatibles with two disk
drives and a minimum of
256K bytes of random-access
memory. It runs under Micro-
soft Corp.'s MS-DOS 2 and
above, and works with an
IBM or Hercules Computer
Technology, Inc.-compatible
graphics card. The program
can also take advantage of an
Intel Corp. 8087 math co-
processor, according to Pacif-
ic Crest.

On-line service pools stock info, archival data

By David Bright

WOBURN, Mass. — Hop-
ing to attract corporate and
financial decision makers
who need both current and
past corporate business in-
formation, Datext, Inc. and
Dow Jones & Co. have an-
nounced CD/Newsline. The
subscription product merges
on-line stock quotes and
news stories from Dow Jones
News/Retrieval service with
seven years worth of busi-
ness and financial informa-
tion from Datext's Corporate
Database, which resides on
compact-disk read-only mem-
ory (CD-ROM) optical disks.

Available in the fourth
quarter to existing subscrib-
ers of Datext's Corporate Da-
tabase, CD/Newsline will
work with a user-supplied
IBM Personal Computer and
modem. Annual fixed sub-
scription prices begin at
$14,100.

With the service, users
can obtain analysis of com-
panies listed on the New
York, American, over-the-
counter and regional stock
exchanges. The service's
fixed price gives subscribers
the advantage of being able

to conduct an unlimited
amount of research without
being subject to variable on-
line charges, according to Da-
text Marketing Manager Dan
Schimmel.

Along with obtaining
stock quotes, users can also
get a profile on the board
members of a particular com-
pany, examine current and
past news stories concerning
the organization and read re-
ports from investment ana-
lysts.

Datext's software report-
edly guides the user through
each step of the analysis, us-
ing the same keystrokes to
access both the CD-ROM and
on-line data bases. The pack-
age also includes software
for transferring on-line in-
formation to standard appli-
cation programs such as Lo-
tus Development Corp.'s
1-2-3.

The Corporate Database
includes up to four CD-ROM
disks, each focusing on a con-
sumer, industrial, technologi-
cal or service sector. Prices
range to $24,100 for a four-
disk subscription. Volume
discounts are available,
Schimmel said.

MICROCOMPUTERS

Gambling on software success

vored file manager and word processing package that it positioned against Software Publishing Corp.'s PFS:File product.

"There was a perception that PFS was running out of steam," says Turner. However, Q&A has failed to push PFS:File into obscurity.

With calendar year 1985 sales of $1.4 million, Symantec was the only one of the three firms to make the "1985 Soft-letter 100," a list of the top 100 micro software firms in the U.S., published by "Soft-letter."

Ansa and Javelin were not listed, because they did not begin shipping product until late in the year, Tarter says.

Ansa Software's data base management package, Paradox, faced perhaps the greatest challenge in trying to give Ashton-Tate's Dbase III a run for its money. "Our feeling is that Dbase has been stretched as far as it can be stretched," Dow says. In order to substantially improve Dbase, Ashton-Tate will have to "start from scratch," he maintains.

Earlier this year, however, Dbase III Plus knocked Lotus out of its No. 1 spot on the Softsel Hotlist, and its sales show no signs of abating.

Fortunately, Ansa is selling into a growing market for microcomputer data base software. The U.S. market for such software will increase from $471 million in 1985 to $648 million by 1989. This indicates a higher rate of growth than spreadsheet, word processing or integrated software packages, according to Market Access International, Inc., a San Jose, Calif.-based software research firm that was recently acquired by the Seybold Con-

sulting Group. Market Access, which forecasts to 1989, sees virtually no growth in the spreadsheet market.

> "There aren't going to be too many companies that will join the fray and be successful."
> — Rod Turner
> Symantec Corp.

All three firms claim a steady growth in sales. But to survive they must continue to enhance their mainstream product and introduce applications in other categories to protect against declining demand for the primary product, analysts say.

Javelin soon will announce a new version of its financial analysis package that is faster and offers more features, according to Herot.

Javelin will also make a local-area network version of the product avail-

able, but Herot declined to be more specific.

Additionally, Javelin will announce a corporate pricing program and probably provide customers with a choice of copy-protected or non-copy-protected versions.

Ansa also plans to introduce other products. Financial backer Sevin Rosen Management Co. "wouldn't have invested in it if it was to be a one-product company," Dow notes. Ansa has already enhanced its product and removed copy protection.

Symantec will eventually introduce products that are already developed, but are too large for existing personal computers, and will also increase its publishing efforts, Turner says.

The firm currently offers two software add-on products and a memory board.

First commercial PC enshrined

Altair 8800, which was included because of its completeness. The Micral arrived after the judging had begun — it reportedly was delayed by customs authorities who couldn't figure out what it was.

Other noteworthy entries included the Cromemco, Inc. Dazzler, which generated the first color video graphics, the EPA Micro 68, which fit into a briefcase, and a "Blue Box" built by Wozniak and future Apple partner Steve Jobs in the early 1970s for making free long-distance telephone calls.
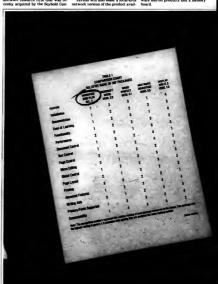
In his talk, Wozniak focused on that period of his life, rather than the present-day Apple or his new company, CL 9 (for "Cloud Nine"). He said he is intentionally keeping the home entertainment video products company small, so as to have fun and spend time with his family.

Wozniak spoke fondly of the garage-shop days before Apple developed its rigid corporate structure. For example, to finance the production of the Apple I system in late 1975, Wozniak sold his most valuable possession — an HP65 calculator — for $500 and Jobs arranged a 30-day credit plan for the necessary chips. "It's amazing what you can do when you've got one level of management," he said.

Currently, Wozniak works for Apple only as a consultant.

Last weekend, he graduated from the University of California at Berkeley, finally completing the education interrupted by a stint as an engineer at Hewlett-Packard Co. and by Apple's success. Wozniak had originally joined HP to save money for school. Now, after accumulating enough money to finish college and to just about anything he wants, he hopes to become a school teacher.

Publishers wary of desktop units

no said. "All we're saying is someone has the capability; on a desk, or in an office, or in the middle of the desert, to produce a page with mixed text and graphics that can be a master for printing."

Publishing professionals were also wary of the overall technical capabilities of low-end electronic publishing and are waiting for camera-ready half-tone photographs and denser dots-per-inch reproduction from laser printers.

However, they did not deny that emerging microcomputer publishing capabilities could prove important to business. For the corporate print-shop, it could easily pay for itself simply by producing the business forms that otherwise go to outside presses, Romano said.

But at Comdex/Spring, desktop publishing promoters went much further with promises of extensive capabilities and large markets. Charles Pesko, of the market research firm Pesko Associates of Marshfield, Mass., predicted the current $55 million desktop publishing market will grow to $1 billion by 1990.

John Meyer of Ventura Software, Inc. described a lucrative corporate market with in-house documents being produced on PCs instead of presses and also emphasized uses in personal graphics art houses. Ventura, of Morgan Hill, Calif., recently signed with Xerox Corp. for exclusive distribution of its as-yet unreleased Ventura Publisher for Microsoft Corp. MS-DOS systems.

Hewlett Packard Corp. eyes a strong market for laser-printed publishing "in any knowledge-based business" equipped with PCs, according to Laserjet Marketing Manager Bill McGlynn.

And Ken Skier, president of Ski-Soft in Lexington, Mass., a developer of an unreleased page-layout program for IBM-compatible machines, called current applications "primitive compared with what will evolve."

Several of the PC players said they plan systems that are expandable for desktop publishers who want to add specialized features.

Skier said he believes any IBM PC-DOS system will have to incorporate the same "what you see is what you get" principles that the Macintosh has popularized. "Forget the code-heavy font systems typical of professional typesetting," Skier said. "Apple has clearly shown the way."

Apple, wheat maintains it opened the desktop publishing market, appears undaunted at approaching competition from IBM and compatible suppliers.

John Zeisler, Apple business marketing manager, said, "There's a lot of confusion in the marketplace. With that factor, we have the leadership position."

He said Apple aims at selling a whole system to a new market — and maybe sneaking in the side doors as businesses discover the Macintosh's other attributes. "We're not looking at a desk with a PC on it already," he said. "We're looking at the 40 million without any PC yet."

Resolving the pop-up conflict

and all the other ill-behaved applications out loose in the world.

Since early this year software houses have been kicking around ideas to simplify life. As a starting point, Microsoft put out a proposal for some guidelines.

Philippe Kahn of Borland said the main problem is how to determine when the operating system could be interrupted and asked Microsoft to release some relevant documentation.

At this month's conference, Microsoft did promise to release more information on MS-DOS interfaces. This pleased the assembled developers, who previously had to take "the archeological approach to software engineering," commented Robert Frankston, co-author of Visicalc and chief scientist for Lotus Development Corp.'s Information Services Division.

Borland handed out the experimental package Memory Organization Manager (MOM). This is a RAM-resident program for managing RAM-resident programs that deals with how packages are loaded and unloaded and how hot keys work.

It seems likely, attendees said, that some guidelines will be reached and that these will have some kind of effect. At best, guidelines would minimize the compatible compatibility testing that has been required until now. At worst, they would offer a handy mechanism for finger-pointing among vendors.

For the moment, there's plenty of blame to share among mainstream application vendors as well. The favorite example of ill-behaved software seemed to be Microsoft Word.

But no one expects a magic solution, as Frankston noted.

"There are a lot of subtle issues here," he said. "As you learn more, it becomes more complex. One of the problems is software engineering is the big gap between getting things to run once and getting things to run consistently."

And Frankston pointed out that these kinds of programs represent "an interim technology," until the arrival of future releases of MS-DOS, offering multitasking and upgraded memory management.

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COMMUNICATIONS

DATA STREAM
Elisabeth Horwitt

Vendors fear Novell trend

During Comdex/Spring this April, four network vendor representatives quietly informed Seybold Consulting Group Vice-President Tom White of their fears that "an overburdened Novell" was offering less and less support to the network vendors that sell its Netware software, a trend that could have serious implications for Novell, Inc. customers.

"I heard this uniformly from these companies, who prefer to remain nameless because they still have to deal with Novell," White reports. "They think of Novell's products as a big part of their selling strategy. And they are finding that the company's latest software enhancements, as well as the training they need for their salesmen and marketing people, have been slow in coming. They have trouble getting Novell's attention."

The reason for Novell's lack of response, according to White, is that the company is allocating more and more of its resources to selling complete network directly to customers instead of selling networking boards and software to go with other vendors' products.

Two recent Novell moves point in this direction. One is the introduction last fall of Network Servers 286A and 286B, two powerful, IBM Personal Computer AT-compatible file servers with built-in fault tolerance. At the same time, Novell announced the Network Server 68B, a new version of its original Motorola, Inc. 68000-based S-Net file server that supports 24 ports and

Horwitt is Computerworld's senior editor, communications.

See **VENDORS** page 54

Infotron, Applitek intend to finalize merger by June

By Elisabeth Horwitt

CHERRY HILL, N.J. — A merger currently being contemplated by Infotron Systems Corp. and Applitek Corp. would mesh the two companies' local- and wide-area network offerings into one central management/communications system, company executives said recently.

"Merging our companies will provide customers with a one-stop source for communications products and services," Applitek President Ashraf Dahod noted. Merging the two product lines will enable users to talk to any resource on the network without needing to know if it is local or remote, he added.

Infotron and Applitek are both confident that the merger will go through, according to Dahod. Their first joint project will be to develop a gateway between local- and wide-area networks, he said. "We have both X.25 gateways, but the new

gateway, which should be out in about a year, will be user-transparent."

The merger's second project, which also should take approximately a year according to Dahod, involves integrating the two companies' network management systems. This will enable customers to collect network statistics, do accounting and isolate problems on a systemwide basis, he noted.

One benefit that Applitek expects from the merger is access to Infotron's far larger sales and service organization and Fortune 1,000 customer base, Dahod said.

Founded in 1968, Infotron is a $72.2 million, publicly held company whose wide-area network offerings include statistical and T1 multiplexers, a T1 networking hub and a network management system. "We provide a data private branch exchange, but users want true, cable-based local-area network capabilities, such as

See **MERGER** page 49

NSA won't use DES after '88

By Mitch Betts

WASHINGTON, D.C. — The U.S. government is backing away from the Data Encryption Standard (DES), a government-sponsored encryption algorithm that has recently gained acceptance in the banking industry for electronic funds transfers and is used in most commercial encryption products, according to computer security experts.

The National Security Agency (NSA) does not intend to recertify the DES when it comes up for review in 1988 and plans to substitute new algorithms, according to a report by Datapro Research Corp. in Delran, N.J.

The industry is concerned that the NSA's action will lower the standard's credibility in the industry, even though

See **NSA** page 49

GM, other giants join COS, aim to protect users' rights

By Elisabeth Horwitt

ALEXANDRIA, Va. — Nearly three months after announcing its intention to join the Corporation for Open Systems (COS), General Motors Corp. became a member earlier this month, COS disclosed.

The nonprofit organization revealed at the same time that Chicorp, Dow Chemical Corp. and local-area network vendor Bridge Communications Corp. are also new members.

COS is dedicated to furthering the development and industrywide implementation of networking standards. Consisting entirely of vendor companies until recently, COS has initiated a membership drive to recruit user organizations.

See **GM** page 52

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Quadram division unveils PC AT-compatible network server

Tool offers UPS, 723M-byte disk

By James A. Martin

ATLANTA — The Asher-net Server, an IBM Personal Computer AT-compatible local-area network server unveiled by Quadram Corp. at Comdex/Spring '86, features an uninterruptible power supply (UPS) and mass storage of up to 732M bytes on an internal hard disk.

"With this product, we're moving into a higher end system approach," said Randall M. Johnson, marketing manager for Asher Technologies, Inc., a Quadram subsidiary that developed and is marketing the product.

"The reseller base has lately been migrating toward

> 〃
> 'As businesses
> grow increasingly
> dependent on lo-
> cal-area net-
> works, guarding
> against potential
> disasters becomes
> a serious con-
> cern.'
> — William Riner
> Asher Technologies, Inc.

companies that can solve all communications needs, ones that can get PCs to communicate with corporate data bases and distribute the processing and applications. We are working toward that goal."

The 800W UPS, which is a standard server feature, enables the system to recover automatically after a surge or flicker of power, according to Asher Technologies Executive Vice-President Bruce Watson.

"The server was designed to protect against occurrences that lead to data loss or operation disturbances plus provide data storage expansion capabilities to meet the most demanding applications," Asher Technologies President William Riner said.

"As businesses grow increasingly dependent on local-area networks, guarding against potential disasters becomes a serious concern," Riner said.

"Everything in the file server is controlled by the UPS, which monitors the current coming into the server," Watson noted. "If the power should drop by as little as 3% to 4%, the UPS automatically kicks in."

The feature enables the file server to store all open files on the Quadram Quadnet internal hard disk and proceed through a system shutdown for up to 20 min-

utes, powered by two internal batteries. The standard Quadnet server comes with two batteries and space for a third as backup.

Available now, the Asher-net Server includes the Novell, Inc. Netware 2/286 operating system and interface card as standard features.

The server can support up to four different networks that are compatible with the Novell operating system. Among these are the Quadnet VI and IX, 3Com Corp.'s Ethernetseries and IBM's PC Network.

All configurations feature an internal 360K random-access memory (RAM) floppy disk drive, 2M bytes of RAM, the Novell operating system and network card and the

800W UPS.

The server can accommodate up to four full-height hard disks and/or tape backup units, allowing up to 732M bytes of mass storage.

Hard disk capacity can be expanded to 2G bytes by adding an expansion cabinet with eight-disk capacity and its own 800W UPS. The cabinet should be available by

the third quarter of this year, according to Watson.

A basic configuration, with 109M-byte hard disk, 2M-byte RAM, 800W UPS and the Novell operating system and card, is $18,495, with a 60M-byte tape backup, it costs $17,495. The same configuration with a 183M-byte hard disk retails for $21,995.

COMPUTERWORLD

NSA won't use DES

experts say DES provides adequate security, according to Fred H. Diamond, editor of Datapro's information security report. The effect will be computer users' confusion, perhaps causing them to refrain from buying DES-based encryption products, he said.

In a letter to Datapro, the NSA explained that because of increasing commercial sector DES use for sensitive applications, it has become an attractive target for codebreakers in other countries.

Joan Reynolds, vice-president for data security at Chemical Bank in New York, maintained that DES is a strong standard for most applications. She expressed concern that the NSA decision will prompt users to delay encryption purchases until the next algorithm appears.

Reynolds and Diamond agreed that the NSA decision comes at a time when reluctant users are beginning to accept the need for encryption to protect sensitive data communications.

Diamond, who asserted that the DES is still very secure, speculated that the NSA is concerned about the security of DES keys used for encryption and decryption because the standard has become so widely and frequently used.

NSA's letter to Datapro confirmed that the DES will not be rectified and said new algorithms will be introduced for NSA's Commercial Communications Security Endorsement Program (CCEP).

Harold Daniels, deputy director of information security for NSA, stated that the use of DES algorithm "has spread to sensitive applications, which has made it

an increasingly attractive target for our adversary. Therefore, we have determined that it is in the U.S.' interest to introduce new cryptographic algorithms into the CCEP."

Daniels' letter said that the banking industry can continue to use DES for electronic funds transfer applications "where the contents of the message must be validated and the information content is highly volatile and seldom considered sensitive.

"There are no known security problems or risks involved with the continued use of DES equipment, and products endorsed prior to 1988 may be used for the foreseeable future," the letter said. However, it added that the NSA expects most DES equipment to be phased out and replaced by security products employing new NSA-approved algorithms.

Robert P. Campbell, a computer security authority and president of Advanced Information Management, Inc. in Woodbridge, Va., said the NSA decision will disrupt the slowly emerging interest in encryption products and will discredit the banking industry's adoption of DES. He also disagreed with assertions that the DES has been widely adopted.

The DES was adopted by the National Bureau of Standards in 1975 and by the U.S. Department of the Treasury in 1984 for electronic funds transfers.

Merger set to finalize

high-speed file transfer," Infotron Vice-President of Marketing and Development Robert Bower noted. "We like the versatility of Applitek's product line, as well as the fact that it sells network solutions to the high end of the market, as we do," Bower added.

Gateways to mainframe hosts

Applitek's Unilan product line links a broad range of computers and terminals over broadband, baseband and optical fiber-based localarea networks. The company also offers gateways to mainframe hosts and CCITT X.25 networks.

Earlier this month, the two companies signed a nonbinding letter of intent to contemplate an agreement, under which Applitek would become a wholly owned Infotron subsidiary. The two participants hope to finalize the transaction by June.

If the agreement is called off, Infotron will, under certain circumstances, invest up to $6 million in Applitek stock.

Digital has it now.

COMMUNICATIONS

Vendors fear Novell trend

2G bytes of disk storage.

Novell has also opened nine Netware direct sales and support centers in the U.S. during the last few months, with three more openings planned for this year. The centers will offer 48-hour turnaround for servicing products, as well as training courses in Novell products.

Novell Vice-President of Marketing Craig Burton denies that the new Netware centers will seriously compete with third-party resellers. "All of our resellers and distributors can use the centers' training and technical facilities," he says. "Besides,

they only sell directly to our large corporate customers that buy at least $1 million worth of Novell products."

Burton admits, however, that the new Network Server 286 series will compete with multiuser microcomputer vendors like Molecular Computer, Inc. and CSM Computer Corp., which package Novell's software with their systems.

But other Novell people have admitted the truth of White's accusation. "I asked them, 'Aren't you competing much more directly with your third-party resellers by doing this?,'" White reports. "They said, 'Yeah, you're right; we're not happy about it, but that's the way we're going strategically.'"

Novell's strategy may backfire, considering the firm owes much of its notable success in the volatile,

overcrowded, IBM-dominated personal computer networking arena to its third-party vendor strategy.

Novell currently has 30,000 networks running its Netware network operating system installed worldwide, running on the communications boards and computers of more than 30 network and multiuser microcomputer vendors.

And the company keeps adding to the list. Earlier this month, Ungermann-Bass, Inc. announced the availability of Netware on its Net/One Personal Connection. This seems at first glance like plain good news for Net/One users, who now have a choice of three network operating systems: Novell's, IBM's PC Network or Microsoft Corp.'s MS-Net.

The question is whether Novell provides adequate support — not to mention the assurance that succeed-

ing versions of Netware work with all 30-odd product versions — when it has so many other fish to fry.

Of course, not all of Novell's relationships with its OEMs have been all that cordial in the past. Although quite a number of 3Com Corp. network boards get sold with Netware software, the two firms are old rivals whose executives reportedly began taking pot shots at each other not long ago. The feud was recently fueled by 3Com's introduction of the 3+ networking software, which competes with Novell's Netware.

Reseller relationship

According to Proteon, Inc. Chairman Howard Salwen, the new outlets should not greatly change the company's fairly satisfactory reseller relationship with Novell.

"We and Novell are constantly bumping into each other in distribution channels, but we try to stay cordial," he says. "We use the same distributors. Novell carries our hardware, we carry their software. We can't both get the same customers. But we really don't care who sells our boards as long as they are sold."

All very well for the Proteons of the world; but what about the users who are counting on having the latest release of Netware work flawlessly on their Proteon token-ring boards or their 3Com 3Server?

Nathan Roseman, president of network value-added reseller and consultant LAN Services, Inc. of New York, reports that he recently heard Novell President Ray Noorda boast of late that Novell sells some 200 products. "When you consider that their entire company consists of about 400 people, it's no wonder that it takes so long to get anything from them," Roseman said.

GM, other giants aim to join COS

Lincoln D. Faurer, president and chief executive officer of COS, indicated in a prepared statement that signing up GM was an important step.

"The company has been very active in the standards movement," Faurer noted. GM sponsored the development of the Manufacturing Automation Protocol (MAP) and is currently pushing for industry adoption of MAP as the factory floor networking standard.

"We joined COS to protect users' interests," said Mark Cochroft, GM technical spokesman.

GM already sits on the MAP and the Technical Office Protocol standard steering committee, but the firm wants to participate in "the broader issues being addressed by COS," he added.

'Hope to be elected'

"We hope to be elected to the COS executive committee, but that is not a foregone conclusion," the technical spokesman said.

GM's delay in signing up was bureaucratic in origin, according to Cochroft.

"Getting approval for the COS membership fee of several thousand dollars involved obtaining a lot of signatures," he noted.

Executive Report

Edited by Glenn Rifkin

Electronic and voice mail
They're no match for each other — yet

By JOHANNA AMBROSIO

Pity the major pharmaceuticals firm that imple-
mented voice mail and fancied itself at the leading
edge of technology. Because different systems are
installed in different divisions, no one can talk to
anyone else.

This situation emphasizes a basic problem in
the voice mail industry — the lack of standards.
Further, technological and sociological factors, as
well as corporate America's organization of the
data processing department, have combined to
make the implementation of voice mail fraught
with frustration.

That's not to imply, however, that voice mail
doesn't work. It does, and there are many satisfied
users. But voice mail is just beginning the accep-
tance curve that other technologies — electronic
mail, for example — have braved before it. To
implement voice mail now is to be a true pioneer.
Beware of the arrows.

And because the voice mail side of the equation
has yet to be firmly established, few user compa-
nies have taken steps to combine voice mail with

*Ambrosio is a Queens, N.Y.-based free-lance
writer specializing in technology and business
issues.*

electronic mail. For now, at least, most users are
quite content to keep the two worlds separate
until the problems with voice mail are straight-
ened out.

Few doubt that voice and electronic mail will
someday marry and that video and other forms of
information will join the fray as well. But, in the
words of one observer, "We'll all be significantly
older by the time that occurs."

"Voice mail technology has not
been accepted," says Ed Thomas,
marketing manager for software ap-
plications in Data General Corp.'s
product marketing division. "It's a
new technology for users to justify,
and they're not really sure of its ap-
plications."

Voice mail will take two to three
years to catch on with enough users
to enact "critical mass," observers
agree. In other words, it will take
that long for enough people to use
voice mail to make the technology worthwhile for
everyone else to get into the action.

For its part, electronic mail is not perceived as
the cause of the lack of integration. Electronic
mail has largely become as well accepted a part of
office systems as has word processing.

"Electronic mail is one of the key elements of

*Voice mail is beginning the ac-
ceptance curve other technol-
ogies, such as electronic mail,
braved before it. To implement
voice mail now is to be a true
pioneer. Beware of the arrows.*

Electronic and voice mail — no match yet

an integrated office," says John J. Connell, executive director of the Office Technology Research Group in Pasadena, Calif.

"Many companies say it's the single most productive application. Electronic mail is becoming a business tool rather than just a communications tool," he adds.

Connell's latter point is emphasized by the way in which vendors are selling electronic mail. Instead of focusing on the timesaving and productivity bonuses, vendors sell electronic mail as a way to improve customer service and so affect the bottom line.

Users' reluctance to combine electronic mail and voice mail is not necessarily due to a lack of products that meet the need. Data General and Digital Equipment Corp. have voice mail products that are integrated with their office systems software, Comprehensive Electronic Office (CEO) and All-In-1, respectively.

In both systems, voice mail is an option on the office software's main menu. Users are notified on their computer terminals if they have voice or data messages. And users can phone in from remote locations to retrieve their messages.

Besides these systems from established office systems vendors, IBM recently introduced a voice mail option for its Personal Computer. The company also announced the Phonemail/VM link, the integration of its Professional Office System electronic mail system and Rolm Corp.'s voice messaging system [CW, May 5]. A version for the AT&T Unix Personal Computer is slated for a June introduction.

But as best these systems are only the first generation of voice mail systems yet to come. An ideal voice mail system would be fully integrated

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>
> *'Electronic mail is becoming a business tool rather than just a communications tool.'*
>
> — John J. Connell
> Office Technology
> Research Group

into the electronic mail system and would complement the written word by allowing voice annotation of documents. In this way, for example, someone could leave a voice message that a document needs approval.

Another useful feature is the ability to access voice messages from the computer terminal or workstation as well as from the phone. Users would have the option of printing out messages or answering them right away in written form if that were more appropriate than a spoken reply.

Further, the voice mail system should be part and parcel of the computer already being used, appearing as an option on the main software menu. And, of course, ease of use is paramount for the many levels of employees that would operate voice mail.

None of today's available voice mail systems meet all those basic requirements. But as more vendors introduce products and as more people begin to use them, capabilities will be refined and added.

"You need to get through to the second or third generation of voice mail before the features are there that will make people want to use it," Connell says.

Connell likens the voice mail situation to the first generation of personal computers. "With PCs, you had the technicians who used the first, awful machines. They complained, vendors listened, and the subsequent generation of software and hardware is finally making things easier to do."

At present, only a handful of users are willing to even experiment with an integrated voice mail

Continued from previous page
and electronic mail system. One of these users is Beneficial Data Processing Corp., a wholly owned subsidiary of Beneficial Finance Co. that provides services solely to the parent company.

Beneficial is piloting DG's voice mail system in the office information systems department, according to Luciano Corea, vice-president of office information systems.

Eight staff members are participating in the pilot, which should be completed at the end of October. "We're going to go slow to make sure we have a problem that needs to be solved with voice mail — that we're not throwing out a solution in search of a problem," Corea says.

The pilot project will analyze user friendliness and the amount of disk storage required, identify applications for the system, weigh cost requirements and see if the need justifies the cost.

Beneficial has also beta-tested DG's integrated voice/data terminal, which also uses the CEO software. Corea says he likes it because it saves desk space, and he found the automatic callback feature especially useful.

Corea says he has about 35 DG Dasher D556 integrated voice/data terminals on order for executives and professionals. Because the terminal has a smaller screen and fewer keys than other terminals, it would not be used by a person with high text-entry requirements.

"I don't see voice being made available to everyone because of the disk space required to store voice messages," Corea says. "It won't replace electronic mail; it will be complementary. I see voice mail's major benefit as sending and receiving messages while traveling."

For all their convenience, however, there is a downside to voice mail and electronic mail. "It requires a bit of cultural change," Corea says. By compressing response times, it "puts additional stress on employees. I know you know I saw your message, and it's incumbent upon me to respond in a more timely way than with past methods. I don't have two or three days."

The sociological factors are considerable indeed, and they are largely responsible for why voice mail has not been better accepted. Says Joseph Ramellini, principal at Integral of Stratgies, Inc., a New York consulting firm, "You have to consider the human psychology of the attraction. To use voice mail, you have to know how to dictate a letter or a memo. Most people are not comfortable in that situation."

Further, he says, new rules and social mores will arise to help out users in tight spots. "Like with electronic mail, you're never quite sure where the voice message will ultimately wind up. So you have to think of consequences beyond the immediate situation."

People are used to conversations being private, ad hoc communications that are not retained for future reference. With voice mail, new rules will arise as to what messages to keep and for how long.

Society is, however, changing the way it thinks about voice messaging. Answering machines have become commonplace, and some analysts be-

> People are used to conversations being private, ad hoc communications that are not retained for future reference. With voice mail, new rules will arise as to what messages to keep and for how long.

lieve that holding companies will offer voice messaging services to complement private answering machines. When these holding companies enter the fray, it will help speed acceptance for voice messaging in general.

Ramellini says, "When office automation works well, it doesn't substitute functions but actually changes the way a company operates. That doesn't happen overnight. No matter how wonderful the technology, human beings need time to adjust."

Another problem is the lack of standards in the voice mail industry. "Because voice mail is a nascent technology, there's no real pressure on the vendors," Ramellini says.

"Everyone is still arguing over what voice mail should look like and

what it should do," according to Larry Finocchi, president of Message Processing Systems, Inc. in Charlotte, N.C. "So at this point, integration gives you half-baked voice mail and half-baked electronic mail."

Since voice mail is such a resource hog on the computer one cannot run voice mail and electronic mail — or other PC applications, for that matter — simultaneously. "It's an either/or situation; you can't do both at once," Finocchi says. "So it wouldn't be right to marry them at the moment." He does agree, however, that they someday will be blended.

Another factor repressing voice mail's growth in corporate structure Data processing and communications are two separate worlds, although

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Interview

Mail integration must win top-level support

*P*eter Woal *is vice-president for strategic marketing for GTE Telenet Communications Corp., one of the leading public data network providers. Among its many offerings, GTE Telenet provides extensive electronic mail services to its customers and recently added a voice mail option called Telemessenger. Computerworld Senior Editor Glenn Rifkin spoke with Woal about the viability of integrating these two diverse functions.*

Where is the demand for the integration of voice mail and electronic mail coming from?

The demand is primarily from the early adopters. If you picture the standard distribution curve of a product life cycle, the very early stages of a product will tend to attract all the knob-twiddlers and early adopters. This integration tends to be more of a solution looking for a problem than it is a solution to a stated problem. The whole concept of voice/data integration — whether it be in the voice mail or electronic mail area — or just general realtime voice/data integration is still very much in the cult stage.

What will change that?

One thing that is required is the continued evolution of the technolliteracy of the riding class. Until recently, there has been a tremendous reluctance on the part of management people to fiddle around with things that have keyboards. About as far as they go is a Touch-Tone telephone or pocket calculator. If they have to sit next to a QWERTY keyboard, it blows their minds. The technology available today for integrating voice and nonvoice environments is still fairly immature.

For example, GTE Telenet has been offering a voice mail service called Telemessenger. We've had a number of linkage-type experiments with the Telemessenger and Telemail offerings, and we came away with the realization that these are complementary as opposed to integrative products. They are complementary in the sense that there are some applications for which voice mail will suit very well — very brief messages for people handling between airports — and those which require near ubiquity of terminal access. The cross-pollination of the two produces a whole new set of problems.

Has voice technology come far enough to truly complement electronic mail (E-mail)?

There are technology bases around, such as Digital Equipment Corp.'s Dectalk and Speechplus, Inc.'s Speechtime on the West Coast, which are both very capable products. This is an ASCII stream to a voice synthesis conversion. If you have a bit-encoded message and you want it uttered in the form of synthesized speech through one of these products, the software challenge — the ability to annunciate the human larynx — is getting along

reasonably well, and technology is going to do that. But the software behind it, which simulates the mental processes that drive the voice — for example, the determination of whether a string of characters is an acronym or a pronounceable word — is a real challenge.

Another problem is the very high propensity for misspelling. Once you overcome the natural impediment to using electronic mail, you still have the problem of misspellings. Trying to teach a voice synthesizer how to pronounce a misspelled word is really an inciting process.

I emphasize that it is software and software ancillary content rather than the actual electronics where the technology impediment is.

How far off, then, is more widespread use of these technologies?

I think we'll see some integrated voice and electronic messaging services in niche markets in the next year to 18 months — for example, getting snap quotes on commodity prices, oil prices, things like that, where one needs to disseminate information in real time. This is a pivot example, I suspect, but it is one we've had some experience with. When an oil distributor dispenses a petroleum product into a customer's tank at the commercial level, he wants to get the price at the instant he is dispensing it, which could change from the time he picks it up at the terminal in the morning to the time he's delivering it at noon. He's obviously not running around with a computer terminal in his pocket, although there is probably some likelihood that he might at some time. He can call in on a pay phone and get the quote right now, because it has been posted by someone who keeps it up to date.

I emphasize that because I don't see a broad gauged set of opportunities for integrated voice mail and electronic mail. That is primarily because of the niche nature of jargon and acronyms.

I'm concerned by more and more voice messaging systems, but people still feel constrained by them. They might, for enough, get a

message while they are on the phone, but after they hang up they aren't alerted that a message is there.

That's a common shortcoming of almost any electronic or voice mail system today, primarily because of the inability to force delivery. That doesn't mean it is impossible.

These are challenges that are being grappled with by the electronic mail industry as a whole. Voice mail, to the extent that the delivery process has some analogous properties to those of E-mail, is an area in which you need a mind-reading module in order to figure out that somebody is trying to call you.

> *I think we'll see some integrated voice and electronic messaging services in niche markets in the next year to 18 months.*

GTE Telenet's Woal

If you had to characterize these two technologies, is it accurate to say that electronic mail is a young child and voice mail is an infant?

I'd agree with those characterizations. The gravitational equations come to mind. If you liken it to increase the adverbial population of an E-mail system, you in effect square the likelihood of intercommunicability of any two randomly chosen subscribers. That's what caused the success of the telephone. That's why the mass comes from that makes it a commercially viable opportunity.

The characterization of E-mail as a child and voice mail as an infant is an accurate placement of those two on the evolutionary scale of messaging in general.

Are costs a major factor here?

In voice networking, there is still a materially visible cost to moving the kinds of bandwidth that characterize voice messages over long distances. In the data world, that has been mitigated considerably by the technologies like packet switching and other forms of data compression that take the sting of the long-distance dimension out of the cost. So the cost tends to be dominated by network management costs and local-access and terminal-type costs.

So the cost ingredient of an electronic text-based mail system is based on part occupancy of the host computer. That's going to be the dominant cost, and that's true of the voice mail systems as well.

How important are standards in the success of all this?

We believe they are critical. GTE Telenet and 60 other companies have joined the Corporation for Open Systems. The top two items on the agenda for the COS this year are X.400, which will allow the interworking of text-based E-mail systems, and FTAM, the file transfer service. We're very aggressively supporting the X.400 standard on the belief that this is where the growth is going to come from. You can't keep having this Tower of Babel vulcanization of proprietary architectures incapable of intercommunicating with each other.

The combination of an adopted and implementable standard like X.400, coupled with a directory capability — which is another item on the plans of the COS strategy forum — will make the capabilities within E-mail analogous to those that the telephone network has achieved with its near ubiquity.

Linear subscriber population growth will produce geometric growth, and of course we are looking for the high-volume growth. This will be a major benefit to subscribers as well, because with that growth will come some leveling of what a few people consider the outrageous pricing approaches.

What are the realistic projections for this?

It'll be the end of this decade before we really see any significant benefit materializing out the X.400 deployment. The COS is still in its initial euphoria of the meeting dance, and the realities of competition will continue to be there. But I'm very much encouraged by the fact that it is possible to get 60 arch-competitors together in one place at one time and have them talking in civilized tones to each other.

How reasonable is it to expect workers to accept E-mail and voice mail together as a part of the desk?

A business management generation is about five years long. We're seeing the computer literacy and general willingness to use some of the new technology-based tooling percolating up through organizations. It's pretty much in a mode where you see a shedding of the skin at each progressively higher level of management every five years.

By the end of this decade, we'll see enough of key management people who have been through that indoctrination period to have made a significant dent in what up to now has been an immedial reluctance of senior management to touch anything that looked like a keyboard.

Generally speaking, the distribution of management styles will have been pretty much overtaken by the upwardly mobile, technology-oriented generation by the end of this decade. That will bring these technologies into the important senior management levels. ■

Executive Report Electronic and Voice Mail

No clear winner in war of mails

By MOLLY UPTON

Will the advent of voice mail supersede the need for electronic mail (E-mail)? No more so than speech supersedes written and graphic communications.

But the question becomes interesting when one considers that several vendors are working to provide the

Upton is vice-president, applied technology services, at International Data Corp., Framingham, Mass.

ability to originate and receive both voice and electronic mail capabilities from the same devices. IBM and Rolm Corp., for example, recently announced a link between Rolm's Phonemail and the IBM VM host (CW, May 5). A VM user can now get notification of an existing phone message on an IBM Professional Office System terminal along with regular E-mail. Even then, however, there will be a major difference between the two methods of communications.

E-mail, while used for messaging, is also becoming acknowledged as the primary transmission method for management reports, data and documents and nearly anything else digital that needs to get from one person's workstation to another's.

E-mail clearly has the edge when it comes to preserving the message

either electronically or on paper and thus is useful for documentation. Some systems allow documents to be further edited, eliminating rekeying.

Companies are clamoring for the tools to allow managers to cut and paste reports and spreadsheet analysis into E-mail for sending to others internally. Some organizations are writing their own interfaces. Clearly there is opportunity here for some vendors to improve the utility of their E-mail by offering the ability to cut and paste documents and data from other sources into their proprietary E-mail products.

Thus, in addressing the capability to transmit data, documents and graphics as well as the need to document for perpetuity, voice mail is not enough and E-mail has the edge.

For the user considering other ap-

plications, the following criteria must be considered when deciding which medium to use:
- Length of message.
- Access to sending or receiving instruments.
- Ease of use of systems used by other enterprises.
- Individual proclivity toward verbal or written communications.

Obviously, voice mail is more appropriate for relatively short messages, while E-mail can handle both short and long messages. Once printed out, E-mail messages can be collected and read later. It is hard to envision the day when employees (traipse off to the washroom with a tape of voice mail.

There are telephones at more handy locations than there are terminals, unless one takes one's own portable personal computer. Thus, the text-to-speech synthesis feature (as in Digital Equipment Corp.'s Dectalk) allowing receipt of E-mail messages via telephone should become more commonplace. If message senders would leave an executive summary of their E-mail messages, then when the receiver reached a long message, he could listen to the summary and print it out or listen to the entire message when convenient.

Use could be limited because many systems require Touch-Tone telephones to reach the desired extension's phone mail. The more sophisticated on-site systems will route the caller into the appropriate mailbox without requiring the extension to be entered via a Touch-Tone.

Ease of use is and will be a factor. Everyone is capable of using a plain old Touch-Tone, and generally there are voice instructions to assist an incoming user to another system. Thus, for the caller, there is little trauma associated with leaving voice messages.

E-mail also is climbing aboard the easy-to-use bandwagon. Interconnectivity among E-mail systems is becoming a major trend. E-mail services are forming links between themselves, which, it is hoped, will be transparent, enabling a user to learn only one method of access. Vendors such as Soft-Switch, Inc. are providing interfaces between on-site E-mail and services like MCI Communications Corp.'s MCI Mail.

The choice of medium in message handling is generally an individual decision; some people like the keyboard, and some like to talk. There are some people who flock to the use of verbal store-and-forward messages and detest the keyboard — and vice versa.

In environments where E-mail is used heavily, communications seems to evolve. One company noted that executives key their own messages, so the E-mail tends to be succinct and to the point. In at least one site, users observed that sometimes messages were misinterpreted because of the lack of inflection used in verbal communication or the absence of long explanatory preambles. Eventually there evolved a common understanding of E-mail etiquette.

In the current environment of communications, the asynchronous delivery inherent in both voice mail and E-mail obviates the obstacles imposed by time zones and helps eliminate steps in the tag game. They are both valuable productivity tools. ∎

If you think bringing in new business is difficult, try bringing in a larger computer system to handle that business.

Unless your computer company designs systems with growth in mind, you'll have to reprogram all the data from your old system to run on your new system. An undertaking that could drag on for more than a year and cost hundreds of thousands of dollars.

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Expanding your computer system shouldn't be harder than expanding your business.

Burroughs

DP and MIS are certainly gaining more control over communications, much as they did over personal computers. But the organizational schism means that no one wants to take on voice mail without a clear reason, or mandate, to do so.

"It doesn't seem as though there are people within corporations out there selling voice mail," Connell says. "Because it doesn't relate to the PC world or to the DP world, it's a stand-alone function. It doesn't relate to anything — and so doesn't have advocates."

Pilot programs for voice mail have run into numerous problems. According to Judy Abreu, director of advanced office systems for CBS in New York, "When we piloted a voice mail system, it didn't work. And we realized the reason was because we were piloting it in our department. Voice mail doesn't work well for people who work together closely; they figure they'll see you later anyway. The people who it works for use voice mail out of necessity."

Given all voice mail's uncertainties, some users opt to lease or rent systems so they can keep up with changing technologies and needs. Other users, such as CBS, use a voice mail service bureau. By the end of the year, CBS will spend about $150,000 on outside voice mail services. Some 1,500 people use the voice mail system.

CBS started using voice mail two years ago in its records division when, in a cost-cutting measure, some field sales offices were closed. "But we still had to keep in touch with the salesmen, so we installed voice mail. It allows us to broadcast one message, or individual ones, to salespeople. And sales managers in the home office could ascertain the status of the accounts," Abreu says.

"We've thought about buying our own equipment, but then you have to consider depreciation, maintenance, one to two staffers to administer it

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> **' 'When we piloted a voice mail system, it didn't work, because we were piloting it in our department. Voice mail doesn't work well for people who work together closely; they figure they'll see you later anyway. The people who it works for use voice mail out of necessity.'**
>
> — Judy Abreu
> CBS advanced office systems

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and the floor space, which in New York is expensive," she adds.

In addition, given the requirements of the CBS users, the in-house system would have to be operational round-the-clock. So CBS will delay buying an in-house system for anoth-

er few years.

A second CBS application is at the broadcast group, where top broadcast executives keep in daily contact. Reports on daily events, daily ratings for the television shows and other information is shared.

"At CBS, a lot of top executives use the system, and they get upset if anything goes wrong," Abreu says.

Despite its reputation, voice mail is not really that expensive when considered on a per-user basis. Assuming there's money in the budget and a reason for implementing it, voice mail is not too difficult to cost-justify. An average system costs about $500 per user to install and maintain. The price includes training and communications costs.

But it can easily save twice that amount. If one considers the reduced number of callbacks, the reduced number of typed memos, night-rate savings, reduced cost of chitchat and the like, the savings for a 25-person

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staff can be almost $50,000 per year.

Still, old prejudices die hard, even among technically savvy professionals. According to Fritz Ringling, vice-president of Gartner Group, Inc. and telecommunications analyst, "I was reluctant to use voice messaging at first, because I thought it was impersonal." The Gartner Group has been using a Rolm voice messag-

ing system for more than a year now and Ringling concedes, "I've come to appreciate it as a timesaving tool. I can retrieve or send messages from anywhere, and it's useful for communicating with people in different time zones."

But, he adds, "I still think it's impersonal. And I don't think it cuts down on telephone tag; it's just a different form. A colleague leaves a message on my machine, I

leave one on his. The difference is that if he leaves a proper message at least I know what he wants and can call him back prepared." Finally, Ringling says, "There's a stigma associated. If you have a secretary, you're a more important person."

S till, the benefits of voice messaging are legion. And some voice mail users

are way ahead of the pack.

Trans World Airlines, for example, has a Voicemail International, Inc. system called Aviar that takes voice messaging a step further. The system takes data from TWA's mainframe and broadcasts it, in natural voice, to tellers.

The voice mail system currently provides three applications relating to work scheduling for flight crews, but many more are being

considered, according to Al Whitmore. Former TWA staff vice-president of operations control out of Jamaica, N.Y., Whitmore is now a Walton, Conn.-based consultant in airline operations and computer development.

All three TWA applications are accessible from any tone-generating telephone by a toll-free number. TWA chose the Voicemail International system, Whitmore says, because it is the only one that combines voice messaging functions, data base access and a natural voice.

Natural voice is important, Whitmore says. "A synthesized voice sounds fake; a natural voice is easier to listen to and is just more professional."

> **Despite its
> reputation, voice
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> difficult to cost-
> justify.**

The airline's first voice application, installed in October 1984, informs approximately 8,000 crew members what flights they're scheduled to fly in the coming month.

The schedule of flights is published and distributed to flight attendants and pilots, who then determine which flights they wish to be on. Staff members go through a bidding process for their preferred flights. The flights are actually assigned based on seniority and other factors.

To get the results of their bids, TWA employees phone the voice mail system and enter their identification and security numbers. The system prompts crew members with voice commands as to what to do. The process generally takes 20 to 40 seconds to complete.
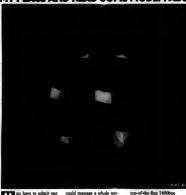
The system saves both time and money over the old method, in which the crew members called a central office location and asked an office worker to look up the information. Before the voice mail system, the average phone call ran 1¼ to two minutes.

"People don't waste time when they're talking to a machine; they don't ask about your wife and the latest company gossip," Whitmore says. Further, valuable phone time isn't wasted while waiting for someone to pull a file or because phone lines are tied up and the crew member is put on hold, listening to music.

Another money saver has been to reduce overtime by

"AFTER DINNER, I THOUGHT WE'D GO TO MY PLACE AND READ SOME MODEM ADS."

cutting down on the work load assumed by the office staff.

Because the voice mail system handles the crew members' requests, office workers can concentrate on other tasks.

About six months ago, TWA installed the second voice mail application — the bidding process itself. At present, flight attendants are the only ones using the system for this purpose; pilots will be added shortly.

With this application, flight attendants call into the system to enter their flight preferences. Between 20 and 30 prompts help employees enter the information, and after every three or four prompts, the system reads back their answers to ensure no mistakes have been made.

It is, Whitmore says, a real-time transaction. Data is captured and sent to TWA's host computer. The bidding process takes between three and five minutes; employees are charged $4 each time they call in a bid. This chargeback system helps defray costs, and employees, who require just one call per month to determine their entire work schedule, have embraced the system wholeheartedly.

The third use of the system is for so-called reserve employees to determine their status.

A reservist is someone who has not been assigned a flight but will fill in for sick or vacationing employees. Reservists are contractually bound to call into TWA twice a day to check on their status.

Once the reserve employee has called into the system and has provided the appropriate identification and password numbers, the system queries the host computer and tells the caller where where to report for duty.

TWA probably has another 20 applications for voice mail yet to be implemented, according to John Zigler, the airline's director of flight operations data systems.

The next probable area TWA will target is for the

system to call out to tell people something has changed. Currently, users must call in to get information.

"We've got a long way to go. We haven't even come close to exploiting all of voice mail's applications," Zigler says.

Other carriers have begun implementing voice messaging systems, Whitmore says. Pacific

Southwest Airlines, Western Airlines, Continental Airlines and People Express Airlines are using voice mail for applications such as reservations and management communications.

Another possibility in the airline business is to use voice mail to cut down on the number of abandoned calls — when a potential customer hangs up rather than face more of a delay. Often, Whitmore says, these delays are

the result of reservation agents giving out information to people calling to ensure that their flights are on time or to find out when the flight of a friend is arriving.

Voice mail could also be used to give the information seekers direct access to an airline's data base, so reservation agents could concentrate on the potential customers who call with rate requests.

> *'People don't waste time when they're talking to a machine; they don't ask about your wife and the latest company gossip.'*
> — Al Whitmore
> Airline operations consultant

> *'I was reluctant to use voice messaging at first, because I thought it was impersonal. But I've come to appreciate it as a timesaving tool.'*
>
> **Fritz Ringling**, Gartner Group, Inc.

Other examples abound. Ramellini tells of a pharmaceuticals firm that put in a voice mail system for its field marketing organization. The marketing representatives were spending the entire week on the road and, next to the consternation of their families, the entire weekend on the phone trying to catch up with the internal corporate people.

"This situation created tension with their families. So voice mail was installed. It cut down on phone time and provided better morale," Ramellini explains.

In addition, he says, it was used as a marketing tool. The marketing director would broadcast a voice memo to all sales reps, asking how the introduction of a new product was going.

Within a few days, after the answers came in, the marketing director was able to ascertain which approaches worked best and, if appropriate, how to reposition the product vis-a-vis the competition.

"It was instant market research," Ramellini says.

Typical of today's users is the

CSR-Powertron division of Contraves Goerz Corp. in Pittsburgh. This division, which manufactures controls and motors for machines, uses voice mail — Electronic Voice Exchange from Message Processing Systems, Inc. — as a way for salesmen to communicate with inside staff.

In Contraves' case, the messages can be heavily technical because of the nature of the business, according to Neil Przepasniak, sales manager.

"A lot of salespeople complained they couldn't contact the engineers, which is necessary because we sell highly technical products. A salesman will need to ask an engineer if a modification can be done, and now he can have an answer for the customer in hours and not days," Przepasniak says. About 100 people are using the system.

Another typical user — at least at this stage of the technology — is Joseph T. Ryerson & Son, Inc. Based in Chicago, the steel service center purchases unprocessed steel and performs the first metal fabrication. Ryerson customers buy the steel, now in bars and sheets, and further process it.

Ryerson has installed voice mail in corporate headquarters and in about one-half of its 25 plants nationwide as a way of increasing communications between its inside and outside sales staffs. Voice mail will be installed in the other plants by November, according to Martha Graffy, a Ryerson business systems consultant.

Ryerson first started installing the system last July. The two most important selection criteria were cost and ease of use; the firm chose the Cyndi system from Genesis Electronics Corp. of Folsom, Calif. About 100 calls each month are processed through Cyndi. From 60 to 80 people at each plant use the system. Primarily the users are salesmen and the inside sales staff, but the system is open to all who wish to use it.

Graffy personally goes to each plant to conduct training and limits the classes to between 10 and 12 people. She says the salesmen find the system easy to use, and, she adds, "Everyone likes it."

Indeed, most companies are using voice mail as a productivity and not a bottom-line tool. That may, however, change as voice mail becomes more accepted and more integrated into a corporation's office system.

Finally, there is also some credence to the theory that integration doesn't match matter; users' immediate needs can be fulfilled by choosing one or the other. Some organizations, such as sales staffs, are naturally voice dependent; others, a documentation group, for example, rely more on the written word.

"The value is not in the integration, the value is in the best electronic mail or voice mail system," says Richard A. Loveland, DEC manager of product planning in the office and information systems group.

His advice is to pick a primary system, voice or electronic mail, depending on your application. Then, whenever it is applicable, integrate the other technology.

"Users won't sacrifice their primary application just to be integrated," Loveland says.

In Depth

FTS 2000
Will GSA's massive procurement sway private telecom strategies?

The U.S. General Services Administration will begin acquisition of a $4 billion telecommunications system in late 1987. The potential effects of this procurement on market and network standards has vendors and business users buzzing.

By EDITH HOLMES

Bernard Bennington is fond of saying that if AT&T had not put an end to Telpak — its bulk private-line tariff — five years ago, the communications industry would have had to invent some comparably catastrophic event.

The demise of Telpak caused the tab for the U.S. General Services Administration's (GSA) common-user Federal Telecommunications System (FTS) alone to rise nearly $100 million a year, notes Bennington, GSA deputy commissioner for telecommunications services. "Suddenly, communications caught management's attention," he says. "Telpak's death has been a great stimulus for change."

GSA now seeks to be the stimulus for change with its plans to replace the aging FTS. The federal government's chief civilian procurement agency has launched the acquisition of a state-of-the-art, long-distance telecommunications network. Dubbed FTS 2000, this procurement of 10 years' worth of voice, data and video services and a service oversight center from a single system manager will be the largest ever.

GSA touts FTS 2000 as the means by

Holmes is a free-lance writer and editor based in Harrisburg, Pa. She specializes in computers and communications.

which the government can use its considerable buying leverage to hasten the arrival of true, integrated telecommunications services. The agency also suggests that the FTS 2000 acquisition may serve as a prototype for major private users seeking to buy long-distance networks in the postderegulation, postdivestiture world.

"This procurement has the potential to push the state of the art, especially in integrated services digital networks [ISDN]," says Robert Bennis, manager of communications systems for Westinghouse Electric Co. in Pittsburgh. Further, he says that "the whole concept of a turnkey system might be very attractive to companies that don't have the resources to create networks like this on their own."

But at the same time, Bennis and other commercial users question whether this purchase of what amounts to the largest private telecommunications system in the world — a network bigger than the 17 largest private networks combined — will ever apply directly to them. And they wonder whether the magnitude of what GSA is trying to accomplish will ever permit this procurement to fly.

The likely vendors for the task worry about the wisdom of proceeding with an integrated network when the standards for the combination of voice, data and video over the same communications links have yet to be set and when the need to replace the current FTS is rapidly approaching the critical stage.
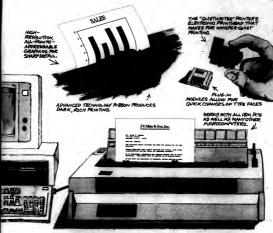
FTS and FTS 2000

The long-distance network that FTS 2000 will supersede today delivers voice and some data services to 1.3 million civilian and defense agency employees in the 50 states, Puerto Rico and the Virgin Islands. Largely analog, the system carries 1.5 billion minutes of traffic each year, 15% of which is data.

The FTS system has 56 major switches linked by 17,518 private backbone trunks, while another 41,000 access lines serve some 1,655 private branch exchanges (PBX) and Centrex systems, each ranging from 200 to 2,000 lines. GSA manages about 420 of these local switchboards; the rest are overseen by individual agencies.

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In Depth/FTS 2000

'60s, the FTS system was provided entirely by AT&T until the loss of Tejpak. It offers such features as a uniform dialing plan, direct station-to-station dialing, on-and-off network calling, automatic alternate routing and national teleconferencing.

For the past five years, GSA has introduced competition into the network by putting blocks of circuits up for bid and awarding them to the carriers offering the lowest prices. As a result of this process, MCI Communications Corp., GTE Sprint Communications Co. — now US Sprint under a GTE-United Telecom, Inc. partnership — and several other carriers entered the federal communications marketplace. Bennington counts six vendors in long-distance service and 27 in local service in the present FTS system.

In all, GSA estimates that FTS saved the government $1.25 billion during the 1970s and even today offers a 12% discount over services available on the public-switched network. The government currently spends more than $420 million annually on the communications system.

GSA says it hopes to hold its costs at this level during the next 10 years, spending more than $4 billion on FTS 2000 between 1987, the year scheduled for contract award, and 1997. Rather than placing functional restraints on future communications vendors or relying on a prime contractor charged with delivering a set of integrated communications services to one million federal end users and a service oversight center to GSA, the contract, an indefinite quantity service agreement, will obligate GSA to purchase a minimum amount of services but will involve no up-front money.

No one company is enough

What the government wants, Bennington explains, is "a one-stop telephone company" from the end of one PBX or Centrex system to the back of another local switchboard. GSA fully expects the prime contractor to turn to several other companies to meet FTS 2000's requirements. No single corporation — be it a communications carrier, a computer company or a systems engineering firm — can handle the task alone.

The chief contractor will be GSA's single point of contact, ultimately responsible for network management, administration and engineering. Because GSA is not buying hardware or architecture, the agency does not plan to be involved in circuit rearrangements, traffic analysis, trouble location and diagnosis, service restoration or billing for the system's usage-priced services.

"We are not engineers, we are not interested in going into engineering and maintenance," Bennington says. "We have major constraints on personnel and capital, and these constraints have been a driving force for us in the decision to go with a prime contractor."

Indeed, GSA would very much like to return to the roles of contract administrator and services delivery monitor that it played in the 1970s. Bennington anticipates that GSA personnel would run the contractor-provided service oversight center to accomplish these tasks.

Where services are concerned, GSA expects its prime contractor to deliver integrated voice, data and

video communications according to minutes of usage and bandwidth and within acceptable levels of bit rates, error rates, blockage factors, trouble rates and trouble response lead times. The agency also anticipates that the successor to FTS will make available such features as broadcasting and mass calling.

Again, "integrated" is the watchword when discussing FTS 2000 services — in no small part because GSA says it believes data will soon dominate federal communications, accounting for 65% more of the FTS traffic between 1990 and 1992.

"The integration of services is the most significant way in which federal telecommunications will change as a result of FTS 2000," Bennington explains. In fact, this change is essential if the total federal work force of approximately 1.9 million — a

population that has remained constant for several years despite shifts in administration — is to keep pace with an ever-increasing work load, he adds.

"The keys to continued productivity improvements are data processing and telecommunications," Bennington says. "Our goal is to bring state-of-the-art telecommunications to government by 1990."

To reach this goal and to maintain state-of-the-art communications through the turn of the century, GSA's FTS 2000 procurement requirements call for a continuing upgradable system that assures that new features and quantities will be provided at the lowest cost. Because FTS 2000 represents such a significant single piece of business to the prime contractor, GSA expects preferred-client status. Furthermore,

the agency warns potential bidders that, if, down the road, the services provided over the system do not represent the best value available to federal users, GSA itself will encourage other agencies to take their business elsewhere.

Vendors react

While GSA will leave the actual design of FTS 2000 to the prime contractor, what the agency clearly has in mind is a software-controlled, data base-driven ISDN. However, Bennington stresses that — beyond the need to meet certain national security and emergency preparedness requirements — the government has no intention of asking vendors to create facilities and services that the companies are not already planning. Indeed, he maintains, "We have said from the beginning that

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> **"**
> *What the government wants is a one-stop telephone company' from the back of one PBX or Centrex system to the back of another local switchboard.*

the successful bidder must piggyback FTS 2000 on an existing network.

"After Telpak," Bennington adds, "we had to wait for a competitive market to form. We expected all along to do what the industry was going to do any way, and when the industry was ready to move forward, we announced plans for FTS 2000."

Since the procurement was first announced in February 1985, half a dozen contenders for the job of FTS 2000 prime contractor have emerged — among them, the chief incumbent FTS provider, AT&T; MCI and its newly acquired Satellite Business Systems unit; US Sprint; ITT's USTS; and Martin Marietta Corp.

"We have a commitment at the chief executive officer level from most of these firms that each intends to be the successful bidder," Bennington notes. "Our aim now is to get all of them to the table."

That may be easier said than done, judging by the reaction of the industry at large to the draft FTS 2000 request for proposals (RFP) published by GSA last October. According to Bennington, based on written vendor comments to the draft and subsequent meetings between GSA and the companies expressing greatest interest in the procurement, four key issues have been identified:

● **Risk.** The vendors uniformly contend that the initial draft procurement requires them to assume too much of the risk for FTS 2000's success.

Bennington acknowledges the validity of many specific vendor concerns, noting that "the first-draft RFP provided the companies with our initial negotiating position. We expected them to dispute portions of it."

The vendors have already won one key point. They objected to GSA's requirement that the prime contractor adhere to a fixed-ceiling price for the 10-year life of the contract, giving up any ability to account for the return of double-digit inflation or increases in local telephone tariffs.

"We listened to the vendors and plan to offer another approach," Bennington says. "Basically, vendors will be asked to bear the risk of costs they can control, and we will probably bear the risk of the costs that no one can control."
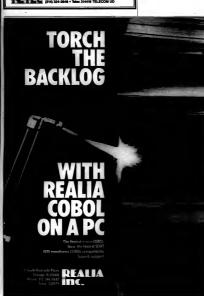
● **Guarantees and an up-front money.** Potential FTS 2000 suppliers lost out, however, on their request for more guarantees and, specifically, for some initial funding. "We aren't prepared to give on this," Bennington explains. "We will guarantee traffic for the three-year transition period, and that's it." What that guarantee amounts to is the cutover of some one million FTS users to FTS 2000 over the life of the project.

"The way the prime contractor can keep his revenue base is by keeping FTS 2000 users satisfied," Bennington explains. "That's an important element in controlling the contract and its costs."

● **Network intelligence.** Several vendors took issue with the initial allocation of system intelligence, suggesting, in general, that more processing power belongs in the customer premises equipment than in the network itself.

Bennington indicates that GSA is flexible on this issue. He reiterates that "we tried to align what we

The timetable for FTS 2000 procurement

asked for with what the major contenders are planning to do. We don't want them to create products and services for the government alone."

He adds that where national security and emergency preparedness are concerned and some tailoring is needed to meet those requirements, "We are prepared to pay for it."

• FTS-to-FTS 2000 transition. Many companies expressed concern that, as the incumbent vendor, AT&T has access to more information about FTS than challengers will have. In addition, they are worried about

how AT&T is to be managed during the cutover process when the prime contractor takes control of the existing FTS and operates it while creating the new system. Finally, these companies want to be certain that AT&T enjoys no cost advantage that would aid its proposal to hold FTS 2000.

Bennington says he believes his agency has come up with solutions to these potential transition problems. These solutions, issues and other matters will be addressed in detail in a white paper that GSA expects to

publish in May.

In general, the GSA officials explains, "Our chief concern is with the technical management of the system. Continuity of service is really paramount." Continuity of service is the key element GSA will look for in vendor proposals.

In addition to the white paper, GSA will issue a second-draft RFP this August, inviting another round of comments from industry before releasing a final RFP in November. Vendors are relieved to see GSA taking this step.

"The first-draft RFP was not a functional set of specifications," says Jerry Gibson, director of government systems for MCI. In fact, "the first-draft RFP was so flawed that it was an impossible procurement for many reasons. I believe even GSA knew that and was simply putting its finger in the wind to see how things felt."

Potential FTS 2000 contractors anticipate that GSA will take some of their concerns into account in the second-draft RFP but put the odds at 50-50 that the agency will not go far

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enough. "If FTS 2000 ever occurs — and it's not at all certain that it will — it will be substantially different from the original RFP," Gibson says.

In the meantime, several vendors note that the current FTS is in difficult straits and requires a shorter term solution than GSA's "grandiose" network scheme. "The FTS is obsolete and expensive," says one company official, who questions whether FTS 2000 can be completed in time to rescue the existing system. He predicts that federal users will leave the FTS in droves before the procurement — "which will be hotly contested and probably protested no matter who wins" — is in place and any economic benefit can be derived from it.

Many companies are concerned that GSA is conducting its procurement in the middle of the industry's

> 'Basically, vendors will be asked to bear the risk of costs they can control, and we will probably bear the risk of the costs that no one can control.'
>
> — Bernard Bennington
> General-Services Administration

evolution toward software-defined virtual networks and ISDNs.

"These concepts are barely off the ground," MCI's Gibson says. "Who knows what they'll look like in the final analysis?" Standards for ISDNs, in particular, are months away from being set.

Agencies react

GSA officials point with pride to the fact that they involved the 10

largest users of the current FTS system in the acquisition process from the beginning. In January 1985, a month before GSA publicly announced FTS 2000, the agency formed what it calls the Committee of 10, consisting of those users who account for two-thirds of all FTS traffic and expenditures.

"Over 50% of these agencies have signed up for the new system," Bennington says, adding that these commitments, made at the assistant secretary level, are binding agencywide. Among the departments that have agreed to use FTS 2000 during its initial three years are the U.S. Department of Health and Human Services and the Department of Agriculture.

Several of the next 10 FTS users — those agencies that together account for another 15% of FTS traffic and expenditures — have signed up as well, according to Bennington. The 52 agencies whose traffic and expenditures comprise the remaining 18% of FTS usage have not been contacted by GSA.

The Department of Defense, which makes heavier use of the FTS than any civilian agency, has yet to tell GSA that the department's traffic will be put on the new system, and industry sources close to DOD say the department is not likely to take this route. They suggest that the Defense Department will stay with the FTS only if the present system is patched — quickly. The Department of the Treasury, meanwhile, has informed GSA that it plans to implement its own intercity telecommunications network rather than be a part of FTS 2000.

While GSA has asked the Treasury Department "to delay making final plans . . . until a proper evaluation can be made of FTS 2000 services," Bennington says he applauds the department's efforts to examine options other than the GSA-sponsored system.

"We must push our users to consider their alternatives, to constantly evaluate their telecommunications systems to be sure they are getting the best service for the best price," he explains. "Forcing them to do that is the key to controlling the whole FTS 2000 contract. It's the key to keeping federal communications costs down.

"The FTS represents less than 15% of the total cost of government communications, and we expect to maintain this percentage with FTS 2000," Bennington continues. "Our objectives with the FTS and FTS 2000 are to get the best prices we can for a core of civil agencies and to provide support for those agencies that don't have telecommunications staffs of their own."

Agencies will be asked to make a final commitment to FTS 2000 between the months that GSA issues its final RFP and makes the award to a prime contractor.

GSA has published a regulation inviting agencies to devise alternatives to the planned system and requiring those that elect to go their separate ways to show that their plans are cost-effective.

Review before commitment

The White House Office of Management and Budget (OMB), meanwhile, has pushed GSA to consider alternatives ever since the agency made its FTS 2000 plans public last year. "OMB's concern is entirely proper," Bennington says. "The White House wanted to be sure that there had been an adequate review of our strategy before we committed to it."

Months of negotiation between OMB and GSA led to the commissioning of Kalba Bowen Associates, Inc. in Cambridge, Mass., to study FTS 2000 alternatives and to the creation of an independent panel of government and industry communications

experts that will review the efforts of both GSA and the outside consulting firm.

A draft of the Kalba Bowen study recently was delivered to GSA, but its contents will not be made public until the agency has completed its review and conferred with the contractor. Meanwhile, the independent panel had met once and was preparing to convene again to hear the consultancy's conclusions.

GSA is concerned that the course it has set is best. "I see no surprises at this point," Bennington says of these two outside examinations of his agency's work.

Impact on commercial users

He acknowledges that "size is the key to GSA's strategy. It might not work if an agency — or a company — isn't big enough. We have no evi-

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> *Rather than applying to the largest commercial users, GSA's turnkey concept might fit the bill for smaller firms that, like the federal government, lack the manpower and the capital to build an extensive network any other way.*

dence to suggest that a department like Health and Human Services or a General Motors Corp. could create and benefit from a procurement like this." GSA has had lots of interest in FTS 2000 from large commercial users. "They want to follow it closely," he says.

Westinghouse's Bennis agrees "We anticipate some real fringe benefits and spillover effects from

this procurement for the Westing-houses of the world."

But at the conclusion of comments like these, GSA's Bennington adds, "What they tell me is, 'When it's successful, we want a copy of the RFP.' "

Skepticism

Even the largest of private telecommunications users remain skepti-

cal about the applicability of this massive public procurement to their future telecommunications needs because of the purchase's sheer size, says Brian Moir, a partner with the Washington, D.C., law firm of Fisher, Wayland, Cooper & Leader.

"Private users are excited about FTS 2000. It's a significant buy, and they will watch carefully to see what vendors offer and how they provide services. But, at a minimum, this network is 10 times bigger than anyone else's," he notes.

Moir, who represents the International Communications Association, questions whether a major communications users, suggests that for 500 of the association's 600 members, most of the concept behind the FTS 2000 acquisition will not be transferable at all because of the project's massive size.

"GSA won't create any new technology with this procurement," the lawyer predicts. "All private network users customize technology to suit their needs, and GSA can be expected to do this, too."

Further, while GSA wants the network delivered on a turnkey basis, the agency also requires outside managerial assistance from the prime contractor.

"The trend in industry is just the opposite," Moir points out. "Companies are bringing in telecommunications talent because they can afford to and because the addition of staff saves them money in the long run." GSA, however, is not in a position to offer the salaries to attract the people it needs.

Bennis suggests that rather than applying to the largest commercial users, GSA's turnkey concept might fit the bill for smaller firms that, like the federal government, lack the manpower and the capital to build an extensive network any other way.

"Perhaps a consortium of, say, Martin Marietta, GTE Corp. and Rolm Corp. will write the book for doing something similar on a smaller scale," he says.

And what of the GSA network's ability to speed the delivery of integrated services? Bennis says that many ISDN applications, such as full-motion videoconferencing, finally might get off the ground with the advent of the new GSA network.

Moir agrees that "FTS 2000 might bring about integrated services more quickly," but he asks, "Who will benefit?"

"I don't see the potential now for these services that the communications systems providers do. Users want services that can be integrated, but they don't necessarily want them delivered in an integrated fashion."

Moir further cautions GSA against a new version of AT&T's old slogan. "The system is the solution." Vendor marketers argue that users want one-stop shopping, he says. "And I agree. But they don't want one-stop shopping, period. They want one-stop shopping as an option."

Despite the concern users and vendors express about the long-term impact — and even the viability of FTS 2000 — GSA's Bennington remains positive.

"Back in the 1960s, the U.S. government was the world leader in telecommunications," he recalls. "Since then, somewhere along the way, we've lost that position. There's no reason why we can't go first-class again." For Bennington and his agency, first-class means FTS 2000. ∎

In Depth

Users tame CICS

'I am often struck by the ingenuity and the extent of changes that CICS users have made to their systems. From the perspective of user stories in the U.S. and abroad, it is not surprising to see a duplication of not only problems but solutions as well.'

By STEVE PIGGOTT

The flexibility of IBM's CICS, which many agree is the transaction processor's major strength, can create headaches for the team or individuals assigned to its installation and maintenance.

It is true that IBM provides the interfaces, user exits and so on by which CICS can be transformed into a more usable product. But coding them is by no means a trivial task, and not all sites possess the necessary skills and knowledge required to accomplish this task to their complete satisfaction.

Many larger IBM MVS shops use teams of six or more systems programmers working full-time on CICS, whereas at the other end of the scale, a small VSE site will probably make only one systems programmer responsible for the upkeep of all systems software

Piggott is editor of CICS Update, a technical journal published by Xephon Technology Transfer, Ltd., Berkshire, England. Formerly, he was a systems programmer at a large MVS installation in the UK.

As the editor of a monthly journal designed to encourage CICS users to exchange views and experiences on a wide range of CICS-related topics, I constantly read articles written by technical support staff from many different countries. I am often struck by the ingenuity and extent of many of the changes they have made to their systems. With such a wide perspective, it is not altogether surprising to see a large duplication not only of problems but also of solutions.

For instance, Rolls-Royce of Canada in Lachine, Que., quite independently opens and closes its on-line DOS DL/1 data bases in the same way as Northern Star Insurance Co., Gloucester, England. In addition, an installation in Middlesborough, England, has developed a method of automatically signing off idle terminals in very much the same way as Standadyne, Inc in Bellwood, Ill., does. Clearly, great minds think alike.

Careful choice, critical judgment

Because CICS users come in all shapes and sizes, IBM has to provide support for many types of terminals, as well as for different programming languages and file and telecommunications access methods. The user must carefully select the relevant options for a number of CICS control programs and tables that form the CICS nucleus.

To avoid ending up with an unnecessarily large and overweight system, good judgment in this matter can prove critical. Generating support for inappropriate functions or blindly accepting IBM defaults can have a far greater effect on performance than the user imagined.

Charles McCrary of Network Computing Corp. in Charlotte, N.C., estimates he was able to reduce his CPU utilization by 2 million instructions per second or the equivalent of an IBM 4381 Model I. He achieved this remarkable feat by disabling the internal Trace facility in both of his production CICS systems and by restricting the CICS Monitoring Facility to the region for which accounting information was needed for chargeback purposes. This simple and painless solution considerably prolonged the life of the existing hardware at the installation.

IBM does not always have its customers' best interests at heart when it

designs systems software. For example, Melvyn Maltz, a systems programmer in the UK, points out that residency can be forced on some programs in the Processing Program Table (PPT) that have been generated using the group macro, although there is no good design reason for this to happen.

He cites two of the programs that form the CICS Enhanced Master Terminal (CEMT) transaction as a good example. These programs can be made nonresident, with a possible saving of 50K bytes for CICS 1.6 users, by coding the following entries in the PPT in the order they are shown.

```
DFHPPT TYPE=ENTRY,PROGRAM=DFHEMTD,RES=NO
DFHPPT TYPE=ENTRY,PROGRAM=DFHEMTD,RES=NO
DFHPPT TYPE=GROUP, FN=OPERATORS
```

In another instance, closing down CICS is not always the straightforward procedure it should be. End users, oblivious to the finer workings of CICS, might simply turn their screens off when they want to go home. Often they are still signed on, sometimes they are in the middle of a transaction. Some installations, faced with this situation, resort to the rather messy and time-consuming solution of performing an immediate shutdown followed by an emergency restart in order to tidy things up.

David Warner, chief systems programmer at Britvic Ltd. in Chelmsford, England, has developed a transaction to display and alter the status of terminals at his installation. Because of the transaction's greater functionality compared with the CEMT transaction, particularly in the way it handles pseudoconversational tasks, the transaction is used effectively to ensure a smooth and orderly shutdown. An operator can easily tell what end users are still signed on at which terminal and what they are doing prior to terminating CICS.

The Irish Dairy Board in Dublin was faced with similar problems. Its programs are developed using an application generator and, as a result, make

> The user must carefully select the relevant options from a number of CICS control programs and tables that form the CICS nucleus. Generating support for inappropriate functions or blindly accepting IBM defaults can have a far greater effect on performance than the user imagined.

use of conversational techniques.

The dairy board has written a program, an entry for which is included in the Program List Table with those programs executed during the first quiescent phase of shutdown. The program determines all outstanding nonsystem tasks and invokes the master terminal Purge function for them. If this fails, the program invokes the more effective but cruder Force Purge function.

Automated operation

At least one UK site has completely automated not only CICS shutdown but also the nightly backups of its on-line files and the subsequent restarting of CICS. This site is able to provide its end users with the CICS availability they require and still perform all the necessary housekeeping without incurring the expense of providing a third operator's shift.

CICS is shut down in a way similar to the methods described above, by the site's own user-written program that is triggered via interval control sometime after midnight. The site, a VSE site, has written another program that releases jobs from the VSE/Power queue via the CI$pool

macro. This program is invoked twice, first at the end of the CICS job stream and then after the backup job stream, when it releases the CICS start-up job.

In addition, the site uses a feature provided by the Macro 4 PLC product Logout, which enables the site to define the automatic replies to some of the console messages it is likely to receive during the processing of the backups or CICS start-up.

CEMT is a powerful transaction and is, quite rightly, restricted in most organizations to only a few qualified personnel, usually technical support or operations staff. Some sites, however, see benefits in extending certain of CEMT's facilities to other staff members. Unfortunately, IBM does not provide a limited-function version of CEMT; users are authorized to use either all or none of its facilities.

Graham Payne, a UK systems programmer, has written a program to allow the applications programmers at his installation to use just the NEW-COPY facility of CEMT, while Robert Arkio, a member of technical support at Butler International, Inc. in Montvale, N.J., allows programmers to use the inquiry functions of CEMT without the ability to change anything. Both of these changes are accomplished by invoking the master terminal program, DFHEMTA, through their own user-written programs.

Transaction dumps

Transaction dumps are normally produced whenever a task abends. These dumps are written to the dump data set until it becomes full. Depending on the release of CICS being used and what other options selected, the dump data set either switches to another data set or ceases to be written to.

Notification that an abend has taken place is sent to the end user's screen and to the transient data queue CSMT, which is typically assigned to the system printer and printed when CICS is shut down. This situation is far removed from what most users want and has led many of them to

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Software that interfaces with IBM's VSE/Power queue appears to be very popular. IBM provides all that is necessary to link CICS and VSE/Power. But in the absence of good examples, attempts to implement such an interface can result in a dismal, if not spectacular, failure.

develop their own refinements in this area.

Several users send a message to the operator's console or some other terminal in the event of a program abend, thus making sure someone apart from the end user is aware that an error situation has occurred. This is most commonly done by replacing the IBM-supplied dummy program error program DFHPEP with user-written code.

DFHPEP gains control af-

ter any program abend, and it is a fairly simple job to extract the relevant information concerning the abend and to write it out to the operator's console. Alternatively, there is a global exit supplied that is given control before any transient data request. This can be used to trap messages about to be routed to CSMT and to send all or some of them to the console or any additional or alternative destination.

Not all the transaction

dumps will need to be printed, especially in a testing environment. A faulty transaction may abend several times and produce multiple transaction dumps, although only one dump is needed to debug the problem. Jimmy Edgar, technical support manager with American Heritage Life Insurance Co. in Jacksonville, Fla., has written a program that selectively prints dumps from the dump data set. Selection of dumps to be printed can be based on task identifier or abend code as well as date and time criteria.

An alternative solution has been implemented by Terry Callaghan, CICS specialist at Midland Bank PLC in Sheffield, England. Callaghan has developed a program that automatically prints the dump data set immediately after it has been written to. He had made a one-line change to the IBM modules that write the dump data set. DFHDCP and DFHDP, to start his program via interval control. With SYSOUT defined as held output, full TSO/ISPF Browse facilities can be used to provide a very helpful online debugging capability.

The statistics question
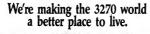
A common concern of many CICS users is obtaining CICS statistics in a form they can use easily and efficiently to help them pinpoint both existing and potential problems. As we have already seen, much of the information about CICS statistics is not available until the end of the day.

For sites with big DP budgets, the answer is to install one of the many third-party software packages that address this problem. Candle Corp.'s Omegamon/CICS and Landmark Systems' The Monitor appear to be at the top of the range both in terms of performance and price. Nevertheless, several of their competitors represent very good value for the money, particularly those offering job accounting and historical reporting capabilities.

IBM's offering, CIC-SPARS, has a significant number of users, although their enthusiasm for the product comes across as little more than lukewarm. Support for the unwieldy IBM's PAII has been withdrawn in Release 1.7 of CICS/OS/VS.

Many CICS users have written their own software in order to help them look at CICS statistics on-line. The most frequently used process involves extracting information from one of the various CICS storage areas, formatting the data and then displaying the information on the screen.

The storage areas of most interest are those relating to the principal CICS tables —

the Program Control Table, the Processing Program Table, the File Control Table and the Terminal Control Table. Each contains useful status information and cumulative statistical data for each of its table entries.

Several users have gone a stage further in extracting statistics from the different DL/1 control blocks and displaying them on a terminal. Some of them have concerned themselves with gathering statistical information on the usage of the DL/1 buffer pools.

Software that interfaces with IBM's VSE/Power queue appears to be very popular. IBM provides all that is necessary to link CICS and VSE/Power. But in the absence of good examples, attempts to implement such an interface can result in a dismal, if not spectacular, failure (as an ex-systems programmer, I can vouch for this from painful experience).

David Green, a senior programmer formerly of Eastern Counties Newspapers in Norwich, England, has written a transaction that writes card image records to temporary storage. These card images are then read by a PL/I program, which in turn links to an assembler routine that writes them to the VSE/Power reader queue using the Putapool macro. Steve Lovett, a systems support manager from Smyrna, Tenn., does a similar thing at his installation. His method makes use of the communications area to pass data from a program that builds the job stream to his routine that puts it to the VSE/Power queue.

Printing from the VSE/Power queue is not so easy because of the higher degree of error recovery needed when dealing with terminal printers. John Ellerslie, a UK systems programmer, has developed his own transaction as an alternative to purchasing a package from a third-party supplier. He does, however, describe his code, which uses the Getspool macro, as "cheap and cheerful."

Global exits

The Global Exit facility, introduced in CICS 1.5, holds many advantages over the previous static user exits. Global exits do not require regenerating CICS control programs to install them or to make amendments. Two or more global exit programs may run at the same exit, or one exit program can run at two or more exits.

John Gaskell, a systems programmer with Rotterdam-based Nederlandse Verzekering Societeit van 1808 in the Netherlands, uses the terminal control program after-input event exit for useful purposes. First, he uses the exit to make the program

function keys 13 to 24 equivalent to keys 01 to 12. Second, he turns the terminal option for uppercase translation on and off, depending on the transaction identifier being used.

Terminal users switch from traditional applications, which require the uppercase translation option to be on, to text processing applications, where upper- and lowercase data needs to be entered, regardless of at which terminal they are located. Many sites use global exits to compress their data streams.

Search for practical solutions

The articles our journal publishes represent the hard-earned lessons of CICS users throughout the world. Some come from installations far richer in CICS functions than even IBM could imagine. Others originate in sites with limited resources struggling to achieve a degree of user friendliness, security,

performance or functionality not provided by the basic system.

I have found that reader interest concentrates mainly on the practical solutions that have been developed by their fellow CICS users. Some sites will come up with good ideas that they are unable to implement because they lack the experience or understanding needed to make them work. Others are unaware of the facilities that are available to help them

enhance their CICS systems, or they do not know how to use these facilities properly.

What appears to the experienced CICS specialist to be a trivial change can represent several months' research and effort to the poor soul not so well versed in CICS terminals.

As one U.S. contributor noted, "One man's garbage is another man's treasure" — a sentiment with which many CICS users would wholeheartedly agree.   ∎

NEW PRODUCTS

Cambridge add-on gets key features

The Cambridge Software Collaborative of Cambridge, Mass., has added three key features to its Cambridge Spreadsheet Analyst add-on program for Lotus Development Corp.'s 1-2-3 and Symphony packages and dropped the price from $149 to $89.95.

Working with 1-2-3 and Symphony, the Analyst checks spreadsheet models for errors and provides logic analysis and complete documentation. Enhancements in Version 2 of the Analyst include an automatic scan function that checks for more than two dozen types of errors (twice as many as Version 1.2), logic report retentions and an open-ended design that accepts add-on programs developed by the Cambridge Software Collaborative.

The scan function highlights such errors as unprotected formulas in protected work sheets; formulas with questionable references to labels, numbers, string formulas and blank cells; the absence of references to numeric cells; and unreferenced or overlapping named ranges.

New documentation features a diagnostics report of the scan results, a settings report that delineates the global defaults and settings information for the work sheet under investigation and a report that shows a condensed view of the entire work sheet.

The first add-on program available for the Analyst is the $49.95 Macro Analysis Module, which documents all macro commands in a spreadsheet.

According to the Cambridge Software Collaborative, the menu-driven Analyst operates like an extension to the Lotus spreadsheets, is compatible with 1-2-3 Version 2 and Symphony Version 1.1 and supports the Intel/Lotus/Microsoft Expanded Memory Specification.

Registered owners of Analyst Version 1.2 may upgrade for free and will also receive a free copy of the Macro Analysis Module. Owners of previous versions of the Analyst may upgrade to the new version for $10.

MAPICS II packages bow

Two utilities also to debut at no charge to customers

IBM recently introduced three application packages for its System/38 Manufacturing Accounting and Production Information Control System (MAPICS) II software line.

The vendor also added two features, available next month, to MAPICS II that will be offered to customers at no charge.

The first software package is Master Production Schedule Planning (MPSP), which was designed for planning of production schedules, resources and master scheduling. The software can generate resource profiles to help create and verify the production plans and master schedule. It has a one-time fee of $13,230 or a monthly fee of $660.

With the announcement of this package, IBM said it has modified its MAPICS II Material Requirements Planning package to work in conjunction with MPSP. The modi-

fied version will be available prior to the release of MPSP and is required to use MPSP.

The Financial Analysis package is an enhancement to the MAPICS II General Ledger, providing more financial reporting and analysis features, such as standard journal entries and budget preparation. The package sells for $345 per month or can be purchased for a one-time charge of $6,900.

The Forecasting package can generate weekly or monthly forecasts based on historical data. It costs $12,650 on a one-time basis or $630 per month.

The no-cost, added features to MAPICS II include the Multiple Job Queue Support, which allows users to process more than one MAPICS II batch job at a time, and the User Created Menus, which allows users to customize menu screens.

The applications packages will be released in late June, according to IBM. Users must have MAPICS II IMSF and MAPICS II Cross Application Support software to run these packages.

IBM unveils Proprinter XL

IBM has introduced the Proprinter XL, a wide-paper desktop printer for its Personal Computer line that features an operator panel for users to key in print commands instead of programming print mode changes.

The Proprinter XL, which sells for $799, was designed for wide-paper printouts, such as spreadsheets. A recommended-paper size is 16½-in. wide and will print lines up to 13.6-in. long.

The three-button operator panel allows users to key in print commands for print quality as well as character size and quality. A user can press one button to quality print, another to switch to double-high print or press a combination of keys to switch to boldface type or change the spacing between characters.

The Proprinter XL is available now.

Ryan-McFarland software speeds up multiuser networks

Ryan-McFarland Corp. of Rolling Hills Estates, Calif., has announced RM/Infoexpress for IBM PC Network environments.

RM/Infoexpress is a software add-on to RM/Cobol-8X. According to the vendor, it allows multiuser applications to execute an average of 10 times faster on a network with five users, with no source or object code changes.

RM/Cobol-8X is an ANSI 1974 Cobol compiler with ANSI 1985 Cobol features and IBM VS Cobol extension. It supports virtually unlimited program size.

RM/Infoexpress, $545, operates with IBM's PC Network, Token-Ring and any network with either PC-DOS or Microsoft Corp. MS-DOS 3.10, the IBM PC Network Program and 100% Netbios compatibility.

NEW PRODUCTS/SOFTWARE & SERVICES

Systems software

McDonnell Douglas Computer Systems Co. has announced the **Reality Integrated Office System,** a software package for its relational data base management system minicomputers.

The package integrates functions such as word processing, spreadsheets and graphics. It also offers electronic mail and the ability for a personal computer running under Microsoft Corp.'s MS-DOS to access the system's data base.

In addition, the package consists of a variety of subsystems, including telephone numbers and addresses, a desk diary, electronic indexing, cal-

culator, teleconferencing, activity management and data base management for personal data bases.

The Reality Integrated Office costs $1,000 to $1,500, depending on the minicomputer system involved.

McDonnell Douglas, 17481 Red Hill Ave., Irvine, Calif. 92714.

Software Techniques, Inc. has introduced **Diskit/VMS,** system software for Digital Equipment Corp.'s VAX computers.

Diskit/VMS is said to include utilities designed to help solve performance problems caused by disk fragmentation.

According to the vendor, the software also improves disk access speed by positioning both directories and frequently used files and optimizing

file extent sizes.

Other features of Diskit/VMS include a directory management tool and a dynamic process monitor that displays information on files opened by any combination of file characteristics.

Diskit/VMS is priced at $4,500, with additional CPUs costing $3,500.

Software Techniques, 6600 Katella Ave., Cypress, Calif. 90630.

Britz Publishing, Inc. has announced **Recon/34/36,** a bank reconciliation system for the IBM System/34 and 36 family of computers.

The program was designed to maintain information about bank checking account activity.

According to the vendor, it can keep an accurate balance for a check-

ing account or keep track of outstanding checks.

Entries are allowed for issued checks, paid checks, voided checks, service charges, debit memos, credit memos and interest earned.

Recon/34/36 can keep track of up to 999 bank accounts for 999 companies.

Recon/34/36 costs $99, including complete RPG source code.

Britz Publishing, 1814 Capital Towers, Jackson, Miss. 39201.

Digital Equipment Corp. has announced **VAX Vain Version 2.**

VAX Vain works with DEC's VAX VTX distributed videotex system. It is a line of development tools.

VAX Vain Version 2 is said to simplify the development of distributed videotex applications, provide increased capabilities for multivendor videotex systems and enable applications developers to develop transaction-oriented videotex applications.

VAX Vain is priced at $8,160 for the Microvax II, $21,200 for the VAX 8200 and 8300, $27,200 for the VAX 8500 and 8600 and $40,800 for the VAX 8800.

DEC, Maynard, Mass. 01754.

Applications packages

Northeast Data Systems, Inc. has introduced **Intrepid MMS,** a closed-loop Manufacturing Resource Planning II management software package, and **Intrepid DMS,** a distribution management software system.

Intrepid MMS is said to allow users to anticipate material shortages and capacity bottlenecks and to respond to changes in priority. It features an interactive data base that connects all departments. It was designed to run on all systems with Pick Systems' Pick operating system.

Intrepid DMS is said to integrate phases of the distribution process including customer service, order tracking, inventory and price controls. It also features an on-line data base. It was designed to run on all systems with Prime Computer, Inc. Information or Pick operating systems.

Both Intrepid MMS and Intrepid DMS are priced at $3,000 to $15,000 per module.

Northeast Data Systems, 20 A St., Burlington, Mass. 01803.

Lawson Associates, Inc. has announced a **Security Module** and an **Employee Expense Module** for IBM 3000 and 4300 mainframe users.

The Security Module is said to secure screens and specific functions within a program. It offers four options: program security, company and process level security, group security and no security. It integrates with all Lawson business management and operational software.

The Employee Expense Module works in conjunction with the vendor's Pinstripe accounts payable package.

It allows users to match employee expenses with advances, track expense reports and advances, create statements for employee records and keep employee expense checks separate from vendor checks.

The modules cost $6,000 each.

Lawson, 2021 E. Hennepin Ave., Minneapolis, Minn. 55413.

NEW PRODUCTS/SOFTWARE & SERVICES

Utilities

IST Sales has introduced Access+, an on-line software product for CICS environments.

Access+ is said to allow users to request information from a mainframe computer and receive responses on a CRT screen or in printed reports. Data from one or multiple files can be located and displayed in flexible formats. Arithmetic operations can be performed on the data, which can be presented in detail or in summary.

Access+ operates in both IBM OS and DOS environments and supports any VSAM structure. A DOS site license costs $16,000, and an OS license costs $24,000.

IST Sales, Suite 240, 2922 Powers Ferry Road, Atlanta, Ga. 30339.

■

Gejac, Inc. has ported Version 3 of its SRF Software Performance Monitor to Digital Equipment Corp.'s PDP-11 computers using the RSX-11M Version 4.2 as well as the RSX-11M+ operating systems.

SRF Version 3 features the video display task, which provides the ability to display real-time bar graphs that show the amount of activity on the computer system at that time, and Secondary Pool Monitoring, which provides RSX-11M+ users the ability to monitor and report on secondary pool-usage statistics in addition to primary ones.

SRF can be licensed for $3,995.

Gejac, P.O. Box 188, Riverdale, Md. 20737.

■

Talaris Systems, Inc. has announced Version 2 of its Qdrive text and graphics integration software package.

New features of Qdrive Version 2 include an all-parameters-displayed menu, an option that permits a user to put more than one page image on one physical page, the ability to scale and center embedded raster graphics and a log file for capturing Qdrive messages.

Qdrive Version 2 for the Digital Equipment Corp. VAX/VMS operating system is priced at $5,900.

Talaris Systems, Inc. P.O. Box 26580, 5160 Carroll Canyon Road, San Diego, Calif. 92126.

■

Telesoft has announced Telegen 2, a version of its Ada compiler and tools for Digital Equipment Corp.' VAX systems.

The package consists of a compiler written in Ada and such components as a library manager, library tool set and an Ada execution environment.

Telegen 2 was designed for the development of Ada applications and can support programs of up to 250,000 lines of code.

New optional tools include a source-level debugger, global optimizer and language productivity tools.

Telegen 2 costs from $18,000 to $35,000 depending on the VAX model.

The optional tools can be purchased separately or packaged at the Host Development System for a cost of $28,000 for the VAX-11/780 and $53,000 for the VAX 8800, according to the vendor.

Teleso ft, 10639 Roselle St., San Diego, Calif. 92121.

■

Sterling Software, Dylakor Division has announced Version 4 of its mainframe auditing utility, Dyl-Audit CMS.

The software is said to incorporate the auditing technique known as dollar-unit sampling.

Version 4 also is said to support 12 additional Systems Management Facility, MFI and Resource Management Facility records for IBM OS installations.

Dyl-Audit CMS is priced at $21,800.

The software runs on IBM 370, 3000 series and 4300 series mainframe computers under VM/CMS.

Sterling Software, Dylakor Division, 17418 Chatsworth St., Granada Hills, Calif. 91344.

■

Relational Technology, Inc. has announced ESQL/Ada, an Ingres program interface to the Ada language.

ESQL/Ada contains an Ada preprocessor that allows Ada programmers to integrate Ada source code with the SQL data base language and forms control of the company's Ingres relational data base and applications-development system.

The Ada preprocessor will work with any Ada language compiler implemented for VAX/VMS, Unix or VM/CMS environments. The preprocessor for the VAX/VMS Ada compiler costs $5,000.

Relational Technology, P.O. Box 4006, 1080 Marina Village Pkwy., Alameda, Calif. 94501.

■

CMA Data A/S has introduced CMA-Spool, software said to let remote sites or departmental users control their own IBM 3270 printers.

The software was designed for 3270 VTAM print networks in MVS and MVS/XA installations. It supports TSO, IMS/DC, CICS and Software AG of North America, Inc.'s Complete under one spooling system.

Features include the ability to route spool files to another printer and reqeue processed spool files for reprinting.

CMA-Spool costs $11,000.

CMA Data A/S, c/o Symark International, 31600 Rustic Oak Drive, Westlake Village, Calif. 91361.

NEW PRODUCTS/SOFTWARE & SERVICES

Cosmic has announced **Tapecert**, an interactive program for testing the usability of magnetic tapes at different densities.

Tapecert is said to allow the user to select the tape density, the test pattern to use, the number of allowed retries and whether to allow extended intercercord gaps to skip past bad spots on the tape.

The program displays system error messages and record count information, with totals every 1,000 blocks. Command procedures can be set up with defaults for different types of certification runs.

Fortran 77 source code is available for $400.

Cosmic, The University of Georgia, Athens, Ga. 30602.

■

Pelorus Equipment, Inc. has enhanced its **P3423K** diskette subsystem.

The subsystem comes with the vendor's Diskutil software and now provides both read and write capabilities for IBM formatted 8-in. diskettes on any model of the Hewlett-Packard Co. HP 3000 family of computers. The subsystem utilizes two RS-232C ports.

The P3423K diskette subsystem costs $6,000. It can be rented for $600 per month.

Pelorus Equipment, 3. Wilson Road, Bedford, Mass. 01730.

■

Triangle Software Co. has announced **Release 5.2** of **JCLcheck** and **Release 4** of the **Prodict** program.

JCLcheck is a utility that is said to detect and diagnose all job control language errors before a program is submitted for test or production runs.

Added features include graphics flowcharts, automatic extraction of procedure library information and Cobol exit enhancements, the vendor said.

Prodict maintains an on-line dictionary of all production jobs, job networks, data sets, programs and cataloged procedures.

New features of Prodict include easier access to dictionary information for IBM ISPF users.

Both programs run under the OS/VS operating systems. JCLcheck also supports VM/CMS and MVS/XA. JCLcheck costs $17,825. Prodict costs $10,250.

Triangle Software, Suite 275, 4340 Stevens Creek Blvd., San Jose, Calif. 95129.

Training software

Intelligenceware, Inc. has announced **Expertech-11**, an expert system product for the IBM Personal Computer.

Expertech-II is a guide to expert system technology

consisting of a collection of tutorials, case studies, on-line and interactive teaching programs, building tools with source code, sample systems and artificial intelligence languages.

Users can build their own expert systems and experiment with a variety of tools and languages, according to the vendor.

Expertech-11 is priced at $475.

Intelligenceware, Suite 730, 9800 S. Sepulveda Blvd.,

Los Angeles, Calif. 90045.

■

Innovative Software Solutions, Inc. has released **Version A.02.03** of its **Image/3000: Principles and Utilities** module of the Teachme/3000 computer-based training series.

The series runs on Hewlett-Packard Co. HP 3000 computers.

The Image/3000 module has been enhanced to include

material on HP's Turboimage data base management system.

The enhanced module will be distributed free to current users of the Teachme/3000 Image module.

The price of the module for new users is $750.

The module and the Teachme driver program combined can be purchased for $1,750.

Innovative Software Solutions, 10705 Colton St., Fairfax, Va. 22032.

Innovative Software Solutions, Inc. has added **Getting Started with Dictionary/3000: Part 2** to its Teachme/3000 series of computer-based training modules for the Hewlett-Packard Co. HP 3000.

The module, intended as a complement to the Getting Started with Dictionary/3000 module, was designed for users with little or no experience with Dictionary/3000.

The module costs $900.

NEW PRODUCTS/SOFTWARE & SERVICES

The module and the Teachme driver program combined cost $1,900.

The price of both Dictionary modules combined with the Teachme driver is $2,900.

Innovative Software Solutions, 10705 Colton St., Fairfax, Va. 22032.

Services

Data General Corp. has recently introduced the Data General On-line Informa-
tion Service (OIS).

Operating over the Compuserve, Inc. network, the system is available for all users of Data General computers in the U.S. and Canada and can be dialed 24 hours a day.

Users can gain access to 12 independent hardware and software vendors from whom they can obtain technical information or software patches to overcome known bugs.

They may also submit spe-
cific questions about their systems to OIS, which Data General will answer.

Prices range from $40 per hour for general information to $70 per hour for downloading software. There is no charge to sign up for the service or to log on.

Fees are incurred only when a specific service is used, a Data General spokesman said.

Data General, 4400 Computer Drive, Westboro, Mass. 01580.

MICROS

Systems

Bondwell has introduced the Bondwell 8, a lap-sized IBM-compatible portable computer.

The Bondwell 8 features 512K bytes of random-access memory, a built-in, 3¼-in., 720K-byte floppy disk drive and 80-col. by 25-line backlit LCD graphics display. It also includes a rechargeable bat-
tery, red-green-blue and composite video outputs, RS-232C serial port, Centronics Data Computer Corp. printer port, 300 bit/sec. modem and Microsoft Corp. MS-DOS and GW-Basic software.

The Bondwell 8 reportedly will run IBM-compatible software, including Lotus Development Corp.'s 1-2-3 and Symphony.

The Bondwell 8 costs $1,595.

Bondwell, #10 3300 Seldon Court, Fremont, Calif. 94539.

Panasonic Industrial Co. has announced the Business Partner IBM Personal Computer-compatible computer and the Business Partner 286, an IBM Personal Computer AT compatible.

Business Partner includes six open expansion slots. It offers switch-selectable 4.77- to 7.16-MHz speed and includes 256K bytes of random-access memory (RAM).

Business Partner 286 offers 10 expansion slots, two hard disk drives and two floppy drives. It has 512K bytes of RAM.

Business Partner costs $1,295 with a 5¼-in., 360K-byte floppy disk drive and $1,495 with two disk drives. Business Partner 286 costs $2,795 with a 5¼-in., 1.2M-byte floppy disk drive and $2,995 with two drives.

Panasonic, One Panasonic Way, Secaucus, N.J. 07094.

Unbound, Inc. has announced new versions of its Qube transportable Digital Equipment Corp. Q-bus-compatible computer.

The Qube family starts with the Q1 Master Module, including four Q-bus quad slots, a 23M- or 44M-byte disk and either a dual RX50 floppy or ½-in. cartridge tape device. It can be expanded with four additional Q-bus slots and peripheral mounting space for two additional 5¼-in. disk or cartridge tape devices.

Prices range from $6,995 to $19,195.

Unbound, 15239 Springdale St., Huntington Beach, Calif. 92649.

Bondwell has upgraded both its Bondwell 18 transportable computer and its Bondwell 36 IBM-compatible desktop personal computer.

The new Bondwell 18 features 640K bytes of random-access memory, two 5¼-in. floppy disk drives, built-in 9-in. amber monitor, built-in color graphics, serial and parallel ports, battery-backed real-time clock and Microsoft Corp. MS-DOS and GW-Basic.

The Bondwell 36 now fea-

AT&T DATAPHONE II
System Controller

AT&T 724 Multiplexer

AT&T PC 6300
AT&T Model 4000
Modem

AT&T Multifunction Communication System

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AT&T 455
Printer

tures a 20M-byte hard disk drive instead of the original 10M-byte hard drive.

The Bondwell is priced at $1,295, and the Bondwell 36 costs $1,500.

Bondwell, #10 3300 Seldon Court, Fremont, Calif. 94539.

Tandem Computers, Inc. has unveiled the 6AT/20 and the 6AT/40, two IBM Personal Computer AT-compatible workstations that reportedly can function as stand-alone units or as fully integrated system terminals for Tandem Nonstop systems.

The 6AT/20 has a 20M-byte internal hard disk drive; the 6AT/40 has a 40M-byte internal hard disk drive.

Both are expandable to 80M bytes of disk storage and 11M bytes of random-access memory. They come standard with Microsoft Corp.'s MS-DOS 3.1, eight IBM PC AT-compatible option slots and a detachable keyboard.

The 6AT/20 costs $3,995, and the 6AT/40 costs $4,495.

Tandem Computers, 19333 Vallco Pkwy., Cupertino, Calif. 95014.

PC's Limited has introduced the Executivetwin, a system said to allow two users of a single IBM Personal Computer to share functions.

Two users can simultaneously share the system's CPU, peripherals and program functions. It features file security through 64 levels of password, file locking and electronic mail.

The system consists of an add-on board, software, cable, monitor and an IBM-compatible keyboard.

Executivetwin costs $495.

PC's Limited, Building 3, 1611 Headway Circle, Austin, Texas 78754.

Software applications packages

Databases Unlimited, Inc. has announced Case Version 1.1, a productivity enhancement software package for the Wang Laboratories, Inc. Professional Computer and Advanced Professional Computer.

Case is said to offer six functions: calendar/appointment book, notepad, Wang Word Processing emulation, calculator, phone book and clock. The product resides in 60K bytes of memory.

Case Version 1.10 costs $98.75.

Databases Unlimited, 38 E. 29th St., New York, N.Y. 10016.

International Microsystems, Inc. has announced Labelmaker, a full-color label-

ing system.

According to the vendor, the program will create programmable read-only memory (PROM) and general-purpose label. Labelmaker allows the user to define label type and size from a stock library.

Labelmaker runs on an IBM Personal Computer or compatible using Microsoft Corp. MS-DOS 2.

Labelmaker costs $1,995, including an eight-color printer and a stock of 10,000 PROM labels.

International Microsystems, 11664 C Ave., Auburn, Calif. 95603.

Market Statistics and Knowledge Access have announced Your Marketing Consultant, a data software package said to offer market data as well as software for manipulating the data.

Your Marketing Consultant allows users to select

and rank target markets based on demographic and socioeconomic criteria and select advertising targets and test markets.

The package costs $950.

Market Statistics, 633 Third Ave., New York, N.Y. 10017.

Printers Software, Inc. has introduced its Hourly Rate Budgeting package for personal computers.

The software was designed to determine the hourly rates that should be charged for cost/work centers. It calculates labor, machine value, rent, heat, insurance, depreciation, light, power, fringe benefits, supervision, taxes, direct supplies, factory overhead, administrative and billing expenses and more.

Hourly Rate Budgeting is priced at $995.

Printers Software, 1395 Rt. 23, Butler, N.J. 07405.

Comshare, Inc. has developed the **Applicant Tracking System** for its Profiles/PC human resource information system for the IBM Personal Computer.

Applicant tracking was designed to help companies fill job positions, respond to job applicants, generate government reports and create customized report formats.

Specific features include skills matching, automatic letter generation and predefined reports.

Applicant Tracking costs $3,200 or $2,100 for companies with Profiles/PC Employees Recordkeeping.

Comshare, P.O. Box 1588, 3001 S. State St., Ann Arbor, Mich. 48106.

●

Polaris Software has announced **Polaris Forms** software for creating custom business forms that supports Hewlett-Packard Co. LaserJet and LaserJet Plus functions.

Polaris Forms is said to allow users to design or update forms with text, graphics and shading positioned within 0.001 in. The program can merge form information from a variety of sources and lets users choose from several different ways to fill out forms.

Other features include automatic date and numbering functions.

Polaris Forms runs on the IBM Personal Computer and compatibles. It costs $449.

Polaris, Suite 205, 310 Via Vera Cruz, San Marcos, Calif. 92069.

●

Computer Business Consultants, Inc. has introduced **Little Blue**, a text editor for the IBM Personal Computer, Personal Computer XT, AT and compatibles.

Little Blue offers text formatting functions such as margins, tabs, paragraph indenting and right justification; a set feature to block text; file append; a jump command for moving to a section of text; search-and-replace functions; support for subdirectories; and one-step printing.

Little Blue is priced at $49.95.

Computer Business Consultants, Suite 325, 20121 Ventura Blvd., Woodland Hills, Calif. 91364.

●

Handle Technologies, Inc. has ported its Unix-based office automation software, including **Handle Calc** and **Handle Writer/Spell**, to the Santa Cruz Operation, Inc. Xenix V operating systems.

Both packages share a common context-sensitive, self-drive in-interface and document data base.

Prices start at $395 for Handle Writer/Spell and $295 for Handle Calc.

Handle Technologies, Suite 900, 7500 San Felipe, Houston, Texas 77063.

●

The Software Resource Group has added **Outline** to its Brown Bag Software products.

Outline is an outline processor for use with the IBM Personal Computer and compatibles. It is a writing tool that reportedly helps organize and structure data for documents, memos, reports and letters.

It can automatically number, perform macros, transfer between windows and number formats.

Outline costs $89.95.

The Software Resource Group, 2105 S. Bascom, Campbell, Calif. 95008.

●

LBMS, Inc. has announced **Leap**, a software-supported method for strategic information technology and data planning.

Leap is said to use elements of business analysis to produce a plan for phased system development.

Leap is supported by Super-Mate software that includes a knowledge base used to evaluate current system strategies and to recommend future directions for information technology. Super-Mate runs on IBM Personal Computer ATs, XTs and compatibles.

Leap is packaged as method, software, technical training and consulting. A typical package costs $29,000.

LBMS, Suite 800, 2900 North Loop W., Houston, Texas 77092.

●

LBMS, Inc. has introduced **Auto-Mate**, a tool said to supplement and reinforce a foundation of integrated techniques and methods called LSDM, LBMS's Structured Development Method.

Auto-Mate guides users through the development cycle with graphics and documentation support. Mouse-driven graphics support the creation and maintenance of logical data structures, data flow diagrams and entity life histories.

Standard reporting as well as ad hoc reports are available.

Auto-Mate runs on the IBM Personal Computer AT, XT and compatibles. It costs $4,000.

LBMS, Suite 800, 2900 North Loop W., Houston, Texas 77092.

●

DCC Data Service has introduced **On-Line Locator**, a program said to automatically match a company's customer with its closest distribution point.

The program allows network organizations to identify proximity of location. It incorporates a data base of longitude and latitude information. The caller's ZIP code or city and state are used to determine coordinates.

On-Line Locator, for the IBM Personal Computer XT or AT costs $1,495.

DCC Data Service, #610 1990 M St. N.W., Washington, D.C. 20036.

●

Pal Systems has announced **Beagle**, a data analysis system for IBM Personal Computers, Digital Equipment Corp. VAX and Hewlett-Packard Co. HP 3000 systems.

Beagle is said to test hypotheses and propose hypotheses for testing.

Output can be either a set of decision rules for classifying examples in a form that the package can use and that the user can understand or those same rules expressed as programs, currently available in Fortran, Pascal, Basic and C. Reportedly, Beagle rules can be plugged into any software the user writes.

PC-Beagle costs $398. VAX-Beagle costs $11,988.

Pal Systems, 3139 E. Almond Ave., Orange, Calif. 92669

NEW PRODUCTS/MICROCOMPUTERS

Software languages

Software Merchants Unlimited, Inc. has announced **Systems Implementation by Example (Simple)**, a fourth-generation application development language.

It is said to employ a visual interface that allows users to develop complete business applications without using procedural code.

According to the vendor, Simple can be used in all stages of the system's development life cycle, from systems analysis through design, programming, testing, maintenance and documentation.

Sample runs on an IBM Personal Computer or compatible, according to Software Merchants Unlimited.

It is priced at $995.

Software Merchants, 3767 Overland Ave., Los Angeles, Calif. 90034.

Barrington Systems, Inc. has introduced **Clarion**, a structured programming language designed for commercial applications.

Features include integrated utilities, interactively designed screen and report layouts and data files that permit the use of multiple composite keys.

Clarion also features application programs supporting field-level editing, Help screens, multilevel windows, support for networking, record sharing and record locking as well as a debugger.

The complete Clarion package includes a set of 12 interactive utility programs.

It runs on an IBM Personal Computer or compatible.

Clarion costs $295.

Barrington Systems, 150 E. Sample Road, Pompano Beach, Fla. 33064.

Software utilities

Generic Software, Inc. has introduced **Auto-Convert**, an add-on package for transferring drawing files from Autodesk, Inc.'s Autocad to the vendor's Generic Cadd and vice versa.

According to the vendor, all major drawing components and text can be transferred between the two programs.

Auto-Convert reportedly can also bring three-dimensional drawings from Megacadd's Design Professional software as well as Microcadd's 3-D package to Generic Software's Generic Cadd.

Auto-Convert, one in a series of modular packages, is priced at $24.95.

Generic Software, 8763 148th Ave. NE, Redmond, Wash. 98052.

Data Management Consultants has introduced **Zview**, a C programmer's screen development tool for the IBM Personal Computer.

Zview offers security checking and Help screen displays at both the screen and field levels.

Other features include the automatic conversion of data types to and from ASCII screen format, a range of optional data field characteristics, a screen painter and windows.

Zview is priced at $345.

Data Management Consultants, #7 5335 S. Valley View Blvd., Las Vegas, Nev. 89118.

North America Mica, Inc. has introduced the **Plot-Il**, microsoft Corp. MS-DOS- and Digital Research, Inc. CP/M 86-based microcomputers.

Plot-Il is said to generate color keyed and time-scaled project diagrams, bar charts, earned value and costs control histograms or line graphs for projects managed with the vendor's PMS-II critical path software.

Plot-Il costs $495.

North America Mica, Suite 110, 5230 Carroll Canyon Road, San Diego, Calif. 92121.

The Laser Connection has announced **Softype**, downloadable fonts on floppy disks, and **Popset**, a pop-up utility that lets laser printer users control their printers through the keyboards of personal computers.

Both packages work on Popset for use with QMS, Inc.'s QMS Kiss, Big Kiss and Smartwriter laser printers.

Popset features commands for margins, font selection, line and character spacing, paper source, common application setups, emulation modes and copy counts. It is random-access memory-resident.

Softype costs $199. Popset costs $59.

The Laser Connection, P.O. Box 850296, Mobile, Ala. 36685.

Taylortechnical Corp. has announced **Perform II**, performance measurement software for IBM Personal Computers, XTs and ATs.

Perform II is said to provide the ability to monitor productivity. It compares actual hours with earned hours and calculates percentage of performance.

Data is stored on a daily, weekly, monthly and year-to-date basis.

Perform II is priced at $495. A Perform II Sort Utility is available for $395.

Taylortechnical, P.O. Box 1878, Bloomington, Ind. 47402.

Clarity Software Corp. has announced **Cell/Mate**, software said to combine automatically produced English documentation features and error-checking capabilities for Lotus Development Corp.'s 1-2-3 and Symphony worksheets.

Cell/Mate automatically produces an English description of the contents of a cell, row or column as well as documentation of a formula and all cells used by the formula.

It also produces a list showing

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where a cell is referenced by other formulas.

Potential errors and trouble spots are identified in more than 30 reports.

Cell/Mate is priced at $89.

Clarity Software, Suite 206, 13276 Research Blvd., Austin, Texas 78750.

■

Xerox Corp. has introduced Scan 'N File and Scan 'N File w/ Editor, software that enables a Xerox Telecopier 296 to scan text and graphics images from paper documents directly to a computer disk.

The software works with Xerox 6060 family personal computers as well as the IBM Personal Computer and compatibles.

Scan 'N File allows the documents to be displayed, printed and stored once on disk. Scan 'N File w/ Editor allows users to cut and paste, type over, draw on or erase all or parts of documents. Files can be merged with documents created by other applications packages.

Scan 'N File costs $595. Scan 'N File w/ Editor costs $995.

Xerox, 900 Long Ridge Road, Stamford, Conn. 06904.

■

Sterling Software, Dylakor Division has announced Dyl-280 II VMPC/370, a version of its Dyl-280 II information management utility for the IBM Personal Computer XT/370 and Personal Computer AT/370 computers running IBM's VMPC operating system.

The product allows users to test and develop Dyl-280 II programs at the microcomputer before submitting them to the host for processing.

It also allows users to retrieve and update almost all mainframe data base and file structures including IMS, IDMS, Sequential and ISAM.

Dyl-280 II VMPC/370 is available for a monthly fee of $15 per PC.

Sterling Software, P.O. Box 3030, 17418 Chatsworth St., Granada Hills, Calif. 91344.

■

Attachmate Corp. has announced the 3270 Host Graphics Program, designed to allow personal computer users to access host-generated color graphics.

The product uses the vendor's IBM- and Digital Communications Associates, Inc. Irma-compatible 3-N-1 Coax Adapter and IBM's PC Emulation Program to manage up to four concurrent host sessions. Full IBM 3270 Personal Computer graphics screens can be displayed.

The product supports both the IBM Color Graphics Adapter and the Enhanced Graphics Adapter.

The Attachmate 3270 Host Graphics Program costs $595. The 3-N-1 Coax Adapter costs $1,195.

Attachmate, 3241 118th S.E., Bellevue, Wash. 98005.

Software data base management systems

CSDC, Inc. has announced Rolindex with Kardindex, a data base and record-keeping system for IBM, Texas Instruments, Inc. and other MS-DOS personal computers.

The program features a card indexing system, a label maker, a uni-

versal filing system and either an accounts receivable system or inventory control system.

No programming skills are required for operation. A scan feature links entries to a detailed sort key. Up to 750 sort selections and 12 sort arrangements are provided.

Rolindex with Kardindex costs $69.95.

CSDC, 7844 Kendalia, Houston, Texas 77036.

Software enhancements

Forth, Inc. has announced Polyforth ISD-4, a version of its Polyforth integrated software development package.

The new version includes a multitasking, multiuser operating system with a complete set of resident tools for interactive software develop-

ment. It has drivers for serial multiplexers and a programmable read-only memory programmer utility.

Two memory management features have also been added: run-time overlays for IBM Personal Computers and random-access memory disk support for IBM Personal Computers and Motorola, Inc. 68000-based systems.

Polyforth systems cost from $2,450 to $375.

Forth, 111 N. Sepulveda Blvd., Manhattan Beach, Calif. 90266.

■

Quadram Corp. has announced enhancements to its Microfazer II universal printer buffer.

New features include printer support capabilities. It is now compatible with Hewlett-Packard Co. plotters requiring reverse channel

protocol and the Diablo Systems, Inc. 630-type environment requiring End of Transmission/Acknowledgment protocol.

Microfazer II is said to buffer print data without using up any computer memory. It also features front panel switch selectivity and a bypass mode for unbuffered operation with hardware handshaking.

Prices begin at $375.

Quadram, One Meca Way, Norcross, Ga. 30093.

■

Compuvision International has announced Giraph Business Graphics 6, a graphics software program for IBM Personal Computers.

Giraph 6 is said to provide multiple choice fill-in-the-forms menus. It

---

How do you answer those tough questions about VAX resource usage? Quantum RS.

When you need software for VAX resource management, system accounting, and capacity planning, you need Quantum RS. It gives you maximum system information with minimum effort so you can account for current VAX resource usage, anticipate future requirements and plan wisely for timely investment in additional hardware.

Quantum RS accounts for computer usage by individual users, projects, user name/projects, departments, accounts and any other accounting entities you define.

Quantum RS tracks all available VMS* resources to give you answers on:

- Capacity planning
- Resource accounting
- Internal cost allocation
- Project accounting
- Chargeback
- Performance analysis

*VAX and VMS are trademarks of Digital Equipment Corporation

165 Bay State Drive, Braintree, MA 02184-5203
Telephone: (617) 848-7515   TELEX: 4996932
The Logical Choice

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also has improved data entry procedures and graphics features including up to 1,000 data points; optional automatic placement of bar values above or in the bars, and pie values outside or inside the pie slices; and plotter output to any communication or printer port for network compatibility.

Giraph 6 costs $49.

Compuvision International, P.O. Box 1287, Old Chelsea Station, New York, N.Y. 10013.

■

CSDC, Inc. has announced Version 3.2 of The Director hard disk, local-area network management program for Microsoft Corp. MS-DOS personal computers.

The Director is said to provide a meno-driven shell that allows users to call up programs, batch files, local-area network functions and MS-DOS functions with a single keystroke.

The Director also offers password protection and a display sequencer and is said to be fully compatible with networking systems.

The Director is priced at $69.95.

CSDC, 7844 Kendalia, Houston, Texas 77036.

■

Trillian Computer Corp. has added synchronized audio and animation to its Trillian Demo Generator Current Authoring System.

The audio and animation synchronization mechanism allows the author to create a demo or tutorial and then add sound. The author can identify frames in the tutorial and write

the sound script in blocks corresponding to those frames.

The system costs $6,800. The cassette player, headphones and computer interface cost $197.

Trillian Computer, Suite One, 406 Alberto Way, Los Gatos, Calif. 95030.

■

Brooks Scientific, Inc. has announced an equation solver for use with the vendor's PCTran Plus modular finite element analysis program.

According to the vendor, the solver allows problems of unlimited size to be analyzed. There reportedly is no limit to the number of nodes, elements, constraints and degrees of freedom in a PCTran Plus analysis.

Prices start at $1,295.

Brooks Scientific, 55 Wheeler St., Cambridge, Mass. 02138.

West End Film, Inc. has announced Version 2 of its Brushwork painting package for IBM Personal Computers and compatibles.

New features include unlimited number of brush styles, full color scan-in, full frisket and stencil capabilities, multiple screens and the ability to paint between them, brushes for mixing and smearing images and true-color video capture.

Brushwork is part of the vendor's Artwork Environment. Software costs from $750 to $2,500. A complete system costs $16,500.

West End Film, 1825 Q St. N.W., Washington, D.C. 20009.

■

DBI Software Products has released Trajectories, Version 5.0.3, said to produce professional statistical results.

Trajectories offers an interface to mainframe and other software programs. Version 5.0.3 includes expanded statistical functions such as programs for two-way analysis of variance (Anova) with repeated measures and equal and unequal sample sizes and two-level nested Anova with equal and unequal sample sizes, Neuman-Keuls test and paired T-test.

Trajectories operates on Microsoft Corp. MS-DOS systems as well as Xenix systems. It costs $395.

DBI, Suite 100, 206 W. Michigan, Mt. Pleasant, Mich. 48858.

■

Lifetree Software, Inc. has announced that its Volkswriter 3 word processor for the IBM Personal Computer is now available on 3¼-in. media to run on the IBM PC Convertible and the Data General Corp. Data General/One.

Volkswriter 3 is a full-featured word processing program with a 170,000 word on-disk spelling checker, automatic multifunction math, customized layouts and text merge.

Volkswriter 3 costs $295. Current owners can upgrade to the 3¼-in. format for $50.

Lifetree Software, 411 Pacific St., Monterey, Calif. 93940.

■

Communications Sciences Corp. has released Version 2 of its Valet desktop manager for IBM Personal Computers.
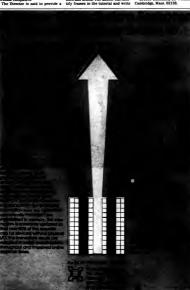
Version 2 includes file management functions such as automatic alphabetical listing of all files and subdirectories; a listing of paths to all subdirectories; the ability to locate a specific file in any subdirectory; and the ability to display the contents of a selected file in ASCII or hexadecimal formats.
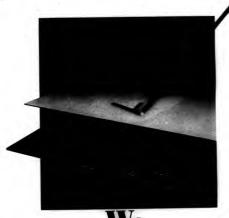
It also provides the ability to delete a file in all subdirectories; the ability to move entire subdirectories as well as individual files; and the ability to copy entire subdirectories as well as individual files.

Valet costs $49.95.

Communication Sciences, Box 130, Route 1, Thornburg, Va. 22565.

Communications

Waterloo Microsystems, Inc. has announced the SNA Irma Server software product for its Waterloo Port Network Operating System for personal computers.

We Have Met The Competition...

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The SNA Irma Server is said to allow a single Digital Communications Associates, Inc. Irma board to be used by any personal computer in the Port network.

A Port network can support multiple SNA Irma Servers. Any PC in the network can emulate an IBM 3278 Model 2 terminal.

Users can perform one or more terminal sessions along with other concurrent activities on their PCs. Also, the SNA Irma Server produces an audit trail of mainframe sessions.

The SNA Irma Server costs $995.

Waterloo Microsystems, 175 Columbia St. W., Waterloo, Ont., Canada, N2L 5Z5.

■

Multi-Tech Systems, Inc. has introduced the Multimodem 224EC, a 2,400 bit/sec. internal-card modem said to incorporate the Microcom

Networking Protocol (MNP) error correction protocol.

The modem was designed to fit all IBM Personal Computers, Personal Computer XTs, ATs and compatibles. It can operate in asynchronous environments and automatically detect and run with or without the MNP protocol.

Other features include Hayes Microcomputer Products, Inc. AT command set compatibility, autodial and autoanswer and half- or full-duplex operation.

The Multimodem 224EC comes packaged with Multicom PC communications software. The modem costs $599.

Multi-Tech Systems, 82 Second Ave. S.E., New Brighton, Minn. 55122.

■

David Systems, Inc. has introduced the Integrated Personal Computer Adapter (IPA), a plug-in board for linking IBM Personal Computers and compatibles to

David's Ethernet-compatible local-area network.

The IPA is said to replace the Ethernet transceiver, coaxial cable and 3Com Corp. board. It works over existing telephone wiring. According to the vendor, the IPA and the user's telephone set can share the same wire for concurrent data and voice communications. An analog telephone set adapter using a standard RJ-11 plug is built into each IPA.

The IPA costs $595.

David Systems, 701 E. Evelyn Ave., Sunnyvale, Calif. 94086.

■

PC's Limited has introduced a **half-card modem** said to handle 2,400 bit/sec. transmissions.

The card is compatible with the IBM Personal Computer, Personal Computer XT, AT and compatibles. It features automatic or manual Originate and Answer functions and accommodates transmissions at 300 or 1,200 bit/sec. and in asynchronous mode.

Other features include an integral speaker with software volume control, accessible dip switches for setup, tone or pulse dialing, call progress detection and dual telephone jacks.

The modem costs $296.

PC's Limited, Building Three, 1611 Headway Circle, Austin, Texas 78754.

■

Genoa Systems Corp. has announced Netsafe, a local-area network tape server.

Netsafe consists of Genoa's Galaxy external tape backup and restore subsystem. It interfaces with the local-area network at the Netbios operating system level and allows users at any point on the network to program backup automatically. Background processing may proceed while backup and restore is in progress.

A 20M-byte universal version of Netsafe costs $1,595, and a 60M-byte external version costs $2,396. Netsafe software is available for $199.

Genoa Systems, 73 E. Trimble Road, San Jose, Calif. 95131.

Data storage

Peachtree Technology, Inc. has introduced the T-33SE, a 33M-byte tape backup subsystem for the IBM Personal Computer, Personal Computer XT or AT.

The T-33SE comes with two compact, automatically loading 20M-byte reels and an on-board error detection device.

The T-33SE is priced at $995. It is available in an internal version, the T-33SI, which costs $795.

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Peachtree Technology, 3120 Crossing Park, Norcross, Ga. 30071.

□

CMS has introduced the SCSI **Power Twin 20:20** 20M-byte combination hard disk and tape backup peripherals in internal and external configurations.

The external configuration includes 20M-byte half-height small computer systems interface (SCSI) disk and tape drives, each of which contains an embedded large systems interface controller. Also included is the half-size CMS Personal Computer Host Adapter card, which allows the personal computer to communicate with the SCSI peripheral bus.

The internal SCSI disk and tape configuration includes a 20M-byte, half-height 3¼-in. tape backup unit and CMS' 20M-byte SCSI Drive Plus expansion card drive.

The external unit costs $1,950, and the internal unit costs $1,660.

CMS, 401-B W. Dyer Road, Santa Ana, Calif. 92707.

□

Universal Peripherals International Corp. has announced **Trumpcard**, a 21M-byte Winchester storage subsystem for the IBM Personal Computer, Personal Computer XT and compatibles.

Trumpcard features the ability to support a second Winchester disk drive. The unit's disk-drive component contains two disks and four heads. It offers a transfer rate of 5M bit/sec. and an average access time of 80 msec.

Trumpcard was designed to operate with Microsoft Corp. MS-DOS and IBM PC-DOS 2 or higher.

Trumpcard costs $795.

Universal Peripherals International, Suite 330, Century Centre, 100 Homeland Court, San Jose, Calif. 95112.

□

AST Research, Inc. has introduced the **AST-2000**, a 3¼-in. hard disk and tape small computer systems interface (SCSI) subsystem for Apple Computer, Inc. Macintosh Plus and Ile users.

The AST-2000 provides 20M bytes of external hard disk storage along with an integrated 20M-byte tape backup. It features an SCSI port, 3¼-in. drive technology and built-in tape backup. The AST-2000 incorporates its own cache memory. It can also be used as a streaming backup device as well as a random-access device.

The AST-2000 is priced at $2,795.

AST Research, 2121 Alton Ave., Irvine, Calif. 92714.

□

N/Hance Systems has introduced the **N/Hance 525**, an optical disk system for users of IBM Personal Computer- or compatible-based computer-aided design or manufacturing systems.

The N/Hance 525 is a write-once, read-many-times system. It provides 230M bytes of formatted storage and includes an optical disk drive, a 5¼-in. disk, an IBM PC short-board controller and device driver software. It has a data transfer rate of 2.5M bit/sec. and can be mounted inside the computer or used externally.

N/Hance 525 costs $3,495. An optional text data base management file system that can index up to one million words costs $1,000.

N/Hance, 908P Providence Highway, Dedham, Mass. 02026.

□

Western Digital Corp.'s Enhanced Peripherals Division has introduced **Filecard20**, a 20M-byte, 3¼-in. half-height hard disk drive with hard-disk controller in a slot card design.

Filecard20 was designed for the IBM Personal Computer XT and compatibles. It takes up 1¼ slots in the XT. It has a transfer rate of 5M bit/sec. and an average access time of 80 msec. It features a drive with hard-seed media on two platters with four heads as well as head lock and spindle lock on power down.

The Filecard20 is priced at $895.

Western Digital, 2445 McCabe Way, Irvine, Calif. 92714.

□

Sysgen, Inc. has unveiled the **SC4000 Turbo Controller** for IBM Personal Computer and Personal Computer XT hard disk and the **Matched Pair** Winchester disk drive subsystem.

The controller is said to achieve true one-to-one interleaving by incorporating a full-track buffer and readahead BIOS. It can control up to two hard disk drives and can accommodate a Sysgen SC500 tape controller for streaming tape backup.

The Matched Pair incorporates the Turbo Controller. It is available in a half-height, 70M-byte configuration or a half-height, 40M-byte configuration.

The Turbo Controller costs $250. The 70M-byte Matched Pair costs $2,995, and the 40M-byte version costs $1,795.

Sysgen, 47853 Warm Springs Blvd., Fremont, Calif. 94539.

□

Genoa Systems Corp. has announced **Release 2.2** of the software that supports its **Galaxy** line of half-height 20M- and 60M-byte cartridge or cassette, disk or tape backup systems for IBM Personal Computers and compatibles.

Release 2.2 is said to add full Novell, Inc. Netware compatibility with advanced backup and restore capabilities. It also features whole-disk image backup; non-IBM PC-DOS par-

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tition image; the Fixup disk-error utility; enhanced automatic backup; directory sort; multiple tape backup and restore, and full menu revision.

Prices for the Galaxy subsystems range from $1,096 for a 20M-byte internal model to $1,995 for a 60M-byte external model.

Genoa Systems, 73 E. Trimble Road, San Jose, Calif. 95131.

Auxiliary equipment

CPS Electronics, Inc. has introduced the Electra Guard 20, a six-outlet surge suppressor strip.

The strip is said to protect microprocessor-based equipment from voltage surges. It offers multistage protection on hot, neutral and ground lines. It is said to meet IEEE specifications, parts A and B, for surge voltage. It features a safety on/off switch and a 6-ft cord.

The Electra Guard 20 costs $99.95.

CPS Electronics, P.O. Box 2460, 4151-112th Terrace N., Pinellas Park, Fla. 34290.

■

Electronic Specialists, Inc. has introduced the Modem/Power/Static Pac, said to provide a protection package for the traveling portable computer.

The unit combines broadband AC power filtering, extended-range spike suppression and a static discharge plate.

Power is available from a conventional three-prong outlet and a CEE-22 universal portable computer power connector. Modem connection is through standard modular RJ-11 connectors.

The Modem/Power/Static Pac costs $184.95, including 6-ft power cord.

Electronic Specialists, 171 S. Main St., Natick, Mass. 01760.

■

Kensington Microware Ltd. has announced the System Saver Mac for the Apple Computer, Inc. Macintosh and Macintosh Plus microcomputers.

According to the vendor, the System Saver Mac is said to organize the system's power with two switched outlets for peripherals; protect the system from surges, spikes and noise; and keep the system cool.

System Saver Mac is priced at $99.95.

Kensington Microware, 251 Park Ave. S, New York, N.Y. 10010.

COMMUNICATIONS

Hadax Electronics, Inc. has announced an automatic switching system designed to provide a means of switching different interfaces between active and fallback positions.

According to the vendor, standard AB switching can be performed either locally through toggle switches on each of the individual channel cards or remotely through a remote-control panel connected to the rack. Gang switching can be performed on each rack in the system locally through the Gang Switch or through the remote control panel.

The standard rack-mount unit accommodates up to 16 channel interface cards. The channel price ranges from $110 to $240.

Hadax Electronics, 44 Sea Cliff Ave., Glen Cove, N.Y. 11542.

Software

Octel Communications Corp. has introduced Aspennet networking software, an enhancement to its Aspen and Aspen Branch voice message systems.

According to the vendor, Aspennet allows users to set up large voice networks. The software automatically routes messages between systems over analog phone lines, taking advantage of low-cost routing alternatives.

Each node can have a two-way exchange and the system accommodates up to 500 remote nodes.

Aspennet networking software is priced from $10,000 per node to $2,000 per node, depending on system size.

Octel Communications, 890 Tasman Drive, Milpitas, Calif. 95035.

Multiplexers/Modems

Carterfone Communications Corp. has added the Adcomm B series to its Adcomm 96/48 modem and multiplexer family.

The B series features Hayes Microcomputer Products, Inc. compatibility and dynamic bandwidth relocation. It achieves asynchronous throughput speeds of up to 19.2K bit/sec.

Two models are available or offered: the -1, priced at $1,695, and the -2, which provides a host-addressable independent statistically multiplexed printer channel, priced at $1,995.

Carterfone Communications, Suite 1100 W., 1341 W. Mockingbird Lane, Dallas, Texas 75247.

Local-area networks

HVE Engineering, Inc. has announced the Syner-System VME/VME real-time interface, said to enable VMEbus-based systems to be integrated into one real-time network.

Using two or more HVE Synergist III transistors, interconnected by 64-conductor cable, Syner-System interfaces permit unlimited expansion of VMEbus backplanes. This enables multiple VME-based systems to operate independently and in a real-time link.

The system supports 24-bit addressing. A two-node Syner-System VME/VME interface costs $1,495.

HVE Engineering, 1684 Dell Ave., Campbell, Calif. 95008.

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Test equipment

Integrated Technology Corp. has introduced the SC-100 Signal Chaser, a local-area network signal tracer.

The hand-held device was engineered for coaxial cabling. It may be used on baseband or broadband local-area networks including those by IBM, Wang Laboratories, Inc. and ITT Courier Terminal Systems, Inc. According to the vendor, it has an operating capability to 36 MHz.

SC-100 Signal Chaser costs $75.

Integrated Technology, 1238 N. Stadem Drive, Tempe, Ariz. 85281.

Auxiliary equipment

Leemah Datacom Security Corp. has introduced the Traqnet 1000 series, an access control system.

The Traqnet 1016, uses a combination of hardware and software to control access for up to 16 dial-up modems or computer ports. It records every attempt at a dial-up connection on a single-line audit trail 24 hours a day.

The Traqnet 1016 is priced at $275 per line card. Up to 16 line cards can be installed in the $995 Traqnet 1016 rack mount unit.

Leemah, 3948 Trust Way, Hayward, Calif. 94545.

SYSTEMS & PERIPHERALS

Turnkey systems

Gould, Inc. has introduced the Gould Remote Sensing System Model 3000 for processing large-scale geographic images.

Available in multiuser configurations, the Model 3000 uses the Gould IP9000 image processor to process Landsat and Spot data used in geophysical exploration and other applications. In addition to the IP9000, the Model 3000 integrates a host computer based on Digital Equipment Corp.'s Microvax II and a remote sensing software package.

Functions include image enhancement, multiple image correlation, image overlay and geometric correction.

The system is priced at $98,185.

Gould, 6630 Fremont Blvd., Fremont, Calif. 94538.

Processors

BICC-Vero Electronics, Inc. has announced a memory module for VME-based computer systems.

The module features 2M-byte memory capacity, 8-, 16-, 24- and 32-bit data transfers, 24- and 32-bit addressing with 4G bytes of total address space, unaligned transfers allowing word transfers at odd addresses, byte parity error detection, programmable interrupter, error logging and typical write/read access times of 90 to 240 nsec.

The memory module is priced at $1,623.

BICC-Vero Electronics, 40 Lindeman Drive, Trumbull, Conn. 06611.

Texas Instruments, Inc. has announced a version of its Explorer LISP-based computer system said to meet the U.S. government's industrial Tempest program.

The Tempest version was designed to reduce security risks by conforming to Tempest standards. This version is fully compatible with TI's commercial Explorer systems.

There are four standard models of the Tempest version of the Explorer. Prices range from $71,900 for a system with 4M bytes of memory, two 140M-byte disk drives and a cartridge tape to $85,400 for a system with 8M bytes of memory, two 140M-byte disk drives and an Ethernet local-area network interface.

TI, P.O. Box 809063, H-856, Dallas, Texas 75380.

Texas Instruments, Inc. and Sky Computers, Inc. have announced the Vortex Model 2400 array processor for use with the Nubus architecture in the TI Explorer symbolic processing computer.

The Vortex Model 2400 board will reportedly operate as a memory-mapped, arithmetic coprocessor. It provides capability for matrix algebra, transcendental and trigonometric functions, solutions to differential equations and orthogonal transformations.

The Vortex Model 2400 board, available in the third quarter of this year, is priced at $9,900.

TI, P.O. Box 809063, H-853, Dallas, Texas 75380.

Daisy Systems Corp. has introduced Cellmaster, an engineering workstation for designing cell-based integrated circuits.

Cellmaster offers automatic placement and routing of free-format layouts, error-free interactive optimization of the chip layout through correct-by-construction editors, and tight coupling with Daisy's electrical and physical design tools. It is also said to permit any number of blocks to be placed anywhere on the chip.

Cellmaster runs on the vendor's Intel Corp. 80286-based Logician workstation with accelerated graphics. It costs $129,000.

Daisy Systems, 700 E. Middlefield Road, Mountain View, Calif. 94039.

Southwest Technical Products Corp. has announced the S1600 minicomputer designed for small to medium-size businesses.

The S1600 is a 1-MHz Motorola, Inc. 68010 system with a 2M-byte memory. It features a 40M-byte Winchester disk, a 60M-byte streaming tape, eight RS-232 ports and an optional floating-point coprocessor. It

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runs under the AT&T Unix System V.

According to the vendor the system can accommodate up to eight users.

The S1500 is priced at $9,995.

Southwest Technical Products, 219 W. Rhapsody, San Antonio, Texas 78216.

National Instruments, Inc.

National Instruments has announced a driver said to control the GPIB11-V2 interface card in Digital Equipment Corp. Microvax II applications running under the VAX/ELN operating system.

In addition to the general-purpose board handler, the driver includes a Pascal language interface and an interactive control program. All the software is distributed as source code and is written in VAX/ELN Pascal.

The software is available for $500. The GPIB11-V2 costs $1,495.

National Instruments, 12100 Technology Blvd., Austin, Texas 78727.

MDB Systems, Inc.

MDB Systems, Inc. has announced the MLSI-BA11-3000 and the MLSI-BA11-3000 rack-mountable chassis.

The MLSI-BA11-2000 can be used as a basic computer chassis for Digital Equipment Corp. Q-bus board-level computer modules. The second chassis is used as an expansion chassis for all DEC Q-bus CPU systems as well as for the Microvax computers.

Each backplane and card guide assembly has 22-bit addressing and can accommodate eight quad-size modules, 16 dual-size modules or any combination.

The MLSI-BA11-2000 costs $1,750. The MLSI-BA11-3000 costs $1,650.

MDB Systems, 1995 N. Batavia St., Orange, Calif. 92665.

Graphics systems

Microfield Graphics, Inc.

Microfield Graphics, Inc. has announced the T4 Color Graphics Controller for use with the IBM RT Personal Computer.

The T4 is a 1,024 by 800 pixel, 4-plane color controller that uses a very large-scale integration-based bit-slice processor. It occupies a single slot on the RT PC's peripheral bus. The T4 is supported by an ANSI color graphics interface.

The T4 is priced at $3,200.

Microfield Graphics, Suite 161, 8285 S.W. Nimbus, Beaverton, Ore. 97006.

Data Translation, Inc. has introduced the **DT2661 High Resolution Frame Grabber**, a single-board image processing product for Digital Equipment Corp.'s Microvax II, Micro/PDP-11 and LSI-11 systems.

The board is said to perform real-time math and logic operations on single or multiple 512- by 512-pixel images with full 256 gray-level accuracy. The Frame Grabber features multiple synchronization I/Os, an on-board 8-bit arithmetic logic unit and two 256K-byte memory buffers.

Also available is the DT2658 Auxiliary Frame Processor, said to speed calculations.

The DT2661 Frame Grabber costs $2,995, and the DT2658 Auxiliary Frame Processor costs $1,595.

Data Translation, 100 Locke Drive, Marlboro, Mass. 01752.

Data storage

Zetaco, Inc. has unveiled the **LRS-10 optical subsystem**, the **MV/4000** and **MV/10000 memory expansion boards**, subsystems, **DPS-1 dual processor** switch and **STA-1 tape drive interface adapter**, all Data General Corp.-compatible products.

The LRS-10 includes an optical disk, a magnetic disk and Zetaco's controller that emulates DG's Argus. Prices range from $20,000 to $30,000. The expansion boards are available in 2M-, 4M- and 8M-byte capacities and cost from $4,995 to $10,975.

Subsystems are fully integrated magnetic disk and tape subsystems with capacities ranging from 300M to 3G bytes. Prices range from $12,900 to $36,000.

The DPS-1 allows two CPUs to share one tape drive and one line printer. It costs $1,895.

The STA-1 allows connection of an STC-interfaced drive to a Pertec Peripherals Corp.-interfaced tape controller. It costs $1,895.

Zetaco, 6850 Shady Oak Road, Eden Prairie, Minn. 55344.

Emulex Corp. has introduced the **EQ8**, a Digital Equipment Corp.-compatible mass-storage packaged subsystem.

The EQ3 is a three 5¼-in. peripheral subsystem enclosure capable of housing either a single disk drive, a disk drive with ¼-in. cartridge tape drive, dual disk drives or dual disk drives and a ¼-in. cartridge tape drive. It is available in both ST506 and enhanced small disk interface disk configurations.

The subsystem provides up to 1.2M bit/sec. transfer rate and up to 638M bytes of storage.

Prices range from $6,050 to $21,000, depending on the configuration.

Emulex, P.O. Box 6725, 3545 Harbor Blvd., Costa Mesa, Calif. 92626.

Emulex Corp. has announced nine **Emulex Micro Subsystem (EMS) kits** for providing a complete single-disk, dual-disk or tape package for use in Digital Equipment Corp.'s Microvax II BA123 World Box enclosure.

Each EMS kit consists of one or two disk drives with all necessary hardware, a QD01, QD21 or QT12 controller, activity panel, all accessories.

NEW PRODUCTS/SYSTEMS & PERIPHERALS

sary cables, RX50 or TK50 disk diagnostic and formatter utilities and documentation set. The kits provide up to 1.2M bit/sec transfer rate and up to 1.276G bytes of mass storage.

Prices for the kits range from $2,570 to $17,995.

Emulex, P.O. Box 6725, 3545 Harbor Blvd., Costa Mesa, Calif. 92626.

Emulex Corp. has introduced the L804 and the L808 memory boards for Digital Equipment Corp.'s Microvax II systems.

The L804 is a dual-height 4M-byte memory expansion board, and the L808 is a quad-width 8M-byte board. A maximum of two memory boards can be used to increase the system memory capacity to 9M or 16M bytes.

Emulex Corp. has announced the SC7003 disk controller for integration of disk drives with a storage module device or extended interface.

The controller emulates Digital Equipment Corp.'s RH750 or 780/785 and 8600/8650 Massbus adaptor with an attached RM02/03, RM05 or RM80 disk drive. It has capacities of 80M to 850M bytes and transfer rates from 1.2M to 3M bit/sec.

The SC7003 has up to eight drive

Both feature user-selectable array-disable switching and onboard byte parity generation and verification.

The LM04 costs $1,495, and the LM08 costs $2,995.

Emulex, P.O. Box 6725, 3545 Harbor Blvd., Costa Mesa, Calif. 92626.

Qualogy, Inc. has introduced the QE-2000 family of enhanced small device interface (ESDI) storage systems for Digital Equipment Corp.'s Microvax and Micro/PDP-11 computers.

The QE-2000 family includes a quad-height controller, the QE2, with a 1M-byte cache memory that will support up to four ESDI drives. The QE2 is configured with 64K-in. Winchester drives with storage capacities of 140M and 330M bytes.

QE-2000 series products are said to queue up to 32 commands and dy-

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ports on the board and features a 28-sector random-access memory buffer.

The SC7003 is priced at $8,950.

Emulex, P.O. Box 6725, 3545 Harbor Blvd., Costa Mesa, Calif. 92626.

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namically compute the best order of execution.

Prices range from $1,770 for the QE2 to $36,000 for a fully configured rack mount system.

Qualogy, 2241 Lundy Ave., San Jose, Calif. 95131.

Qualogy, Inc. has introduced the QS-6000 storage module device (SMD) subsystem for Digital Equipment Corp.'s Microvax and Micro/PDP-11 computers.

The QS-6000 system is said to feature a 1M-byte cache memory and will be offered with the Fujitsu Ltd. Eagle I and Eagle II drives, which can be configured to provide storage capacities up to 1.3G bytes. It can support one or two SMD drives with data transfer rates up to 24M bit/sec.

The QS-6000 products also feature a dual wide Q-bus controller.

The QS-6000 is priced from about $17,000 to $30,000.

Qualogy, 2241 Lundy Ave., San Jose, Calif. 95131.

Terminals

Link Technologies, Inc. has added the Link 220WP and the PCTerm WP to its alphanumeric terminal line.

The Link 220WP is a version of the Link 220 terminal modified for word processing applications. It includes a keyboard with 41 specially labeled word processing function keys. Functions include a range of file handling, document positioning, text-attribute control and editing commands.

The PCTerm WP is a version of the company's PCTerm modified for word processing applications. It provides an IBM display format and Personal Computer AT-style keyboard.

The Link 220WP costs $649. The Link PCTerm WP costs $699.

Link Technologies, 47339 Warm Springs Blvd., Fremont, Calif. 94539.

Human Designed Systems, Inc. has introduced the HDS3000 series of Digital Equipment Corp.- and Tektronix, Inc.-compatible terminals.

The series is composed of six terminals, featuring 18-in. monitors and a choice of amber, green or page-white phosphor colors.

The HDS3000 series terminals include the HDS3200 VDT, the HDS3200Q video graphic terminal, the HDS3200GX high-resolution graphics terminal; and the HDS3210, HDS3210Q and HDS3210GX APL display terminals.

The terminals range in price from $795 to $1,895.

Human Designed Systems, 3440 Market St., Philadelphia, Pa. 19104.

Printers/plotters

Digital Equipment Corp. has announced the LN03 Plus, a desktop laser graphics printer.

The printer combines electrographic and xerographic technologies with up to 8 page/min. speed and 300 dot/in. resolution, according to the vendor.

In addition, 1M byte of full bitmap memory and Tektronix, Inc. 4010/4014 compatibility are standard.

The LN03 is priced at $4,995. According to the vendor, a field service installable upgrade kit that converts the LN03 Laser Printer to the LN03

NEW PRODUCTS/SYSTEMS & PERIPHERALS

Plus is available for $1,595.
Digital Equipment Corp.,
Maynard, Mass. 01754.

Power supplies

Kalgio Electronics Inc.
has added the Line-Saver
Model LS750 to its line of
Aegis power conditioning
equipment.

The unit utilizes pulse-
width modulation to regulate
the output voltage. It comes
with a 36V sealed recharge-
ble battery, two Spike-Saver
voltage-surge protected and
electromagnetic-
interference- and radio fre-
quency interference-filtered
AC outlets, audible and visu-
al power failure warning sys-
tem, test mode indicator and
switch and replaceable exter-
nal battery.

The Model LS750 costs
$995.

Kalgio Electronics, 6584
Ruch Road, E. Allen Trnpk.,
Bethlehem, Pa. 18017.

Components

Virtual Microsystems,
Inc. has announced the AT/
Bridge, designed to provide
IBM Personal Computer AT
compatibility for Digital
Equipment Corp. VAX users.

The AT/Bridge is a board
that can be plugged into the
bus of the VAX, allowing us-
ers to run PC AT application
software from their termi-
nals. Its PC AT Bus Interface
allows connection to a vari-
ety of IBM PC option cards.

It features an 8-MHz Intel
Corp. 80286 processor, 1M
byte of random-access memo-
ry, one IBM-compatible RS-
232 port and an IBM PC/AT
Bus Interface.

The AT/Bridge currently
works with DEC's Unibus
running VMS. It costs $7,500.

Virtual Microsystems,
Suite 300, 2150 Shattuck
Ave., Berkeley, Calif. 94704.

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AST Research, Inc. has
announced its CM-DHV16 16-
channel, asynchronous, seri-
al interface card.

The card is a quad-size
module that replaces Digital
Equipment Corp.'s DHV11
asynchronous multiplexer
board in DEC Microvax, Mi-
crovax II, LSI-11 and Micro/
PDP-11 computers. It plugs
into any standard DEC Q-bus
backplane slot and provides
data transfer rates up to
38.4K bit/sec. on all channels
simultaneously.

Other features include a
serial port for connection to
DEC-compatible peripherals.

The CM-DHV16 costs
$1,350.

AST Research, 2121 Alton
Ave., Irvine, Calif. 92714.

Auxiliary equipment

Falcon Safety Products,
Inc. has introduced the Dust-
Off Pro System for computer
maintenance and repair pro-
fessionals.

Dust-Off is said to improve
electronic office machine
performance by blasting
away dust particles, remov-
ing dirt and cleaning hard-to-
reach places. It can deliver
modulated blasts of triple-fil-
tered, purified air ranging in
grade from a burst to a mild
puff.

It features a Pro Gun that
is attached to an 8-ft exten-
sion hose. The hose adheres
to a 32-ounce canister of
Dust-Off.

Falcon Dust-Off Pro costs
$57.50.

Falcon Safety Products,
Inc., 1065 Bristol Road, Moun-
tainside, N.J. 07092.

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Falcon Safety Products,
Inc. has announced the
Clean Machine Hi-Tech
Maintenance Kit, a collec-
tion of its preventive mainte-
nance products for computer
and office equipment users.

The kit includes Falcon

TI announces the portable sales tool for General Electric Plastics' field communications.

Instant access with their technical data base and 24-hour communications with headquarters. That's what the SILENT 700™ Model 707 with its easy access module means to GE Company's Plastics Sales Division. Regardless of time zones and sheer distance from the home office, GE Senior Sales Representative Ray Foreman can get the latest product data and can analyze information he needs to prepare for and close a sale. All he needs is his TI 707 portable data terminal and a telephone.

"With the terminal, I can tap into GE Plastics' data base. When ERIS (Engineering Resins Information System) is accessed by my TI 707, I can provide a customer with technical information and product specifications on the spot and leave him with a printout to review.

"The terminal also acts as my message center when I'm in the field. I transfer messages through the GE Crosstile [electronic mail], and the individuals receive them in written format when they pick up their messages. They seem to respond more promptly with accurate, hard copy in front of them. And since I can receive messages anytime, anywhere, the TI 707 all but eliminates 'telephone tag.'"

Ray Foreman believes that the TI 707 is ideal for the salesman on the go. It's lightweight and rugged, takes up approximately one half of a briefcase, and is quiet even at peak operation. "It's exactly the productivity tool we needed for our division's field communications," he concluded.

Find out about the Model 707 SILENT 700 Portable Data Terminal from TI and how it can solve your communications problems. Call 1-800-527-3500, ext. 709; in Canada, 416-884-9181. For more information write TI, P.O. Box 809063, Dept. DTB 193OW, Dallas, Texas 75380-9063.

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The products are contained in a plexiglass kit priced at $39.95.

Falcon Safety Products, 1065 Bristol Road, Mountainside, N.J. 07092.

PRICE REDUCTIONS

AST Research, Inc. has reduced the prices of several add-in boards for the IBM Personal Computer family and compatibles.

For the Personal Computer and the Personal Computer XT, the price of AST's 64K-byte Six Pak Plus multifunction board dropped to $249; a 384K-byte configuration is now $395. A 256K-byte Rampage board for bypassing the IBM PC/OS 640K-byte limitation is now $395. With 2M bytes, the board's retail price is $1,295.

Advantage for the AT sells for $645 with 512K bytes. A 3M-byte version of Advantage costs $1,945. The 3M-byte Ramvantage AT expansion board now costs $1,545.

AST Research, 2121 Alton Ave., Irvine, Calif. 92714.

Verticom, Inc. has reduced the price of its CD-1 and CD-1A 13-in., 640- by 480-pixel, red-green-blue monitors.

Both monitors are said to be compatible with the IBM Personal Computer and compatibles.

The reduced price for both monitors is $795.

Verticom, 545 Weddell Drive, Sunnyvale, Calif. 94089.

Datacopy Corp. has dropped the price of its Model 730 and Model 700 Word Image Processing Systems.

The Model 730 is a flatbed scanner offering either 300 or 200 dot/in. resolution. It comes with cables, Datacopy's Word Image Processing System (WIPS) software and interface board for the IBM Personal Computer XT or AT. It now costs $3,950.

The Model 700 includes the vendor's OCR Plus and WIPS Editor software in addition to the standard WIPS software. It costs $3,950.

Datacopy, 1215 Terra Bella Ave., Mountain View, Calif. 94043.

Texas Instruments, Inc. has announced price reductions for its Explorer line of symbolic processing workstations.

The lower prices apply to Explorer memory boards based on 256K bytes of dynamic random-access memory chips and to Explorer systems incorporating these memories.

The 8M-byte Explorer memory boards cost $17,500. The 4M-byte boards cost $9,500. An entry-level development system with 2M bytes of memory costs $44,900. Systems with 4M-byte and 8M-byte memories start at $51,900 and $59,900, respectively. All models are said to be expandable to 16M bytes of memory.

Texas Instruments, P.O. Box 809063, H-857, Dallas, Texas 75380.

Epson America, Inc. has announced price reductions on hard-disk versions of its **Equity I, II and III** IBM Personal Computer-compatible systems.

The Equity I with 20M-byte internal hard disk now costs $1,895; the Equity II with 20M-byte hard disk now costs $2,495; and the Equity III with 20M-byte hard disk now costs $3,895, according to the vendor.

The hard-disk versions of the Equity I and II feature a 360K-byte, 5¼-in. single floppy disk drive.

The hard-disk Equity III comes with a single half-height 1.2M-byte floppy disk drive.

Epson America, 2780 Lomita Blvd., Torrance, Calif. 90505.

Siecor Corp. has reduced the price of its **Optical Transceiver** fiber-optic Ethernet product.

Siecor's fiber-optic Ethernet products are said to be designed for use in creating fiber-optic backbone local-area networks requiring protection.

Features include collision detection electronics.

The Optical Transceiver costs $699.

Siecor, 489 Siecor Park, Hickory, N.C. 28603.

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NEWS

State employee charged with giving drug dealers DMV data

Ran new-customer checks with system

By Jeffry Beeler

SACRAMENTO, Calif. — An operations specialist of Justice faces charges of aiding a cocaine selling ring by leaking restricted information

tion that allowed his accomplices to certify their prospective buyers.

Through his terminal in the Justice Department's Law Enforcement Data Center (LEDC), Gregory Dougherty, age 25, allegedly confirmed the identities of potential drug customers whose names were referred to him by suspected cocaine

dealer Bradley Kent, 26.

Before new customers were accepted by the drug dealers, officials charged, Dougherty checked their criminal histories and other background and then relayed his findings to Kent.

The case against Dougherty and Kent is outlined in documents filed last month in Sacramento Municipal

Court, where the two are charged with violating the California law forbidding unauthorized disclosure of official criminal histories. Both have pleaded innocent.

Dougherty's alleged illicit use of the LEDC's systems aided the dealers in distinguishing genuine cocaine customers from undercover police, the court papers said.

To spot a possible police trap, the suspects first obtained a customer's name, age and automobile license plate number if they had not dealt with him previously. Then, according to the court records, they directed Dougherty to enter the information at his terminal and ask the state's Department of Motor Vehicles (DMV) system to display the customer's auto registration records.

Access to information about undercover police cars is usually tightly restricted. So if the system replied to an inquiry with a "Record Unavailable" message, the suspects reportedly became wary of their prospect and shunned all future contact with him.

Transportation Couldn't Get Out of First Gear.

As you can see from the accompanying illustration, the differential transmission wasn't the brainchild of Detroit.

No, it was more like Italy. And the engineer was none other than Leonardo Da Vinci.

Needless to say, talking differential transmissions over a plate of pasta in the 15th century was not altogether fashionable and, naturally enough, was met with some skepticism.

Today, of course, the American love affair with the car is rather evident. We couldn't live without it.

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Communications Service Assurance represents a single source for problem detection, diagnosis and preventive monitoring, as well as expediting restoral of your corporate communications. It helps with expansion and alteration and gives you customized services.

Communications Service Assurance packages the comprehensive solution for improving your system performance. You're able to concentrate on strategic MIS responsibilities instead of playing catch-up and reacting to the hassle, headaches and hang-ups of day-to-day problems plaguing your system.

Communications Service Assurance can be applied to any equipment, any protocols, at any site.

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Remember, this is a service. We sell no hardware, lease no lines and repair no equipment.

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We're a wish that's a reality. We're a service that will become as accepted and important as the automobile.

And, yes, we'll keep you rolling in the right direction.

For further information, please call 800-446-4321. Or you can write directly: PacTel Spectrum Services, 100 Pringle Avenue, Suite 750, Walnut Creek, CA 94596, attention N. Floyd, Marketing Director.

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Seattle-area teen hacker sentenced

SEATTLE — An 18-year-old computer trespasser was sentenced in King County Superior Court to two weeks in jail, 200 hours of community service and two years' probation after being found guilty of breaking into the computers of four Seattle-area companies, including software developer Microsoft Corp.

Michael P. Wilkerson of Kirkland, Wash., apologized in court, and his attorney said the young man viewed the break-ins as "an intellectual exercise." He has cooperated with law enforcement by helping train county sheriff's deputies in computer crime and security procedures as well as by assisting authorities investigating a stolen property case in North Dakota.

Wilkerson, who moved to Kirkland from Ventura, Calif., last year, is still a suspect in a credit card fraud investigation by Ventura County police. Several credit card numbers belonging to other people and a computer reported stolen from North Dakota were found and seized during the investigation against Wilkerson last February.

Wilkerson gained varying degrees of access to the firms' computers through access lines. Other victim companies in Washington were Resource Conservation Co., Bellevue; Sunstrand Data Control, Redmond; and Kenworth Truck Co., Kirkland. Microsoft first suspected an electronic break-in and authorized a police telephone tap last fall.

— Peggy Watt

NEWS

Ashton-Tate files copyright suit against alleged Dbase pirate

Employee's tip sparked inquiry

By Peggy Watt

BALTIMORE — Software developer Ashton-Tate earlier this month filed a copyright infringement suit in U.S. District Court against Ohio, Inc., a Frederick, Md.-based developer of health and occupational safety data monitoring systems.

Ohio was charged with selling illegal copies of Ashton-Tate products as part of

its custom software.

Federal marshals and Ashton-Tate representatives searched the Ohio offices and a company officer's home and seized dozens of copies of Dbase, some of them registered and others apparently illegal, and are reviewing the contents, said Geoffrey Berkin, Ashton-Tate associate counsel.

Berkin said Ashton-Tate began the investigation several months ago after a tip from a former Ohio employee. It culminated with Ashton-Tate's petition to federal

court for the search authorization and a restraining order prohibiting Ohio from copying or distributing any Ashton-Tate products, even legitimately, pending court action.

Berkin said Ashton-Tate believes Ohio was including complete copies of Dbase in its $60,000 software systems, designed to track data for occupational health and safety records and which run under the Dbase system.

"We have no reason to believe [Ohio' software] won't work with just runtime copies of Dbase," which are used by most value-added resellers such as Ohio, he said.

Runtime copies are licensed by Ashton-Tate for $50.

Ohio' listed telephone was disconnected shortly after the charges were filed, and an attorney for six individuals named in the complaint declined comment.

The Maryland suit is just one of several recent Ashton-Tate efforts to quash piracy corporations and other commercial use. Last month, the Torrance, Calif., company filed civil charges of copyright and trademark infringement and unfair competition against Volt Data Resources, based in New York, which the software developer claimed was

distributing illegal copies of Dbase II and III to employees. The company designs and installs computerized directory assistance equipment, primarily for local telephone companies.

Ashton-Tate also brought copyright infringement charges against Horn Computer International, Inc. of El Monte, Calif., which allegedly distributed illegal copies of Dbase III and Framework on hard disks it sold.

"Piracy is an industry problem, and we expect to continue our efforts against it," said Norman Block, Ashton-Tate vice-president for finance and administration.

Hacker pleads guilty to erasing IRS files

By Mitch Betts

WASHINGTON, D.C. — A 32-year-old Greenbelt, Md., man late last month pleaded guilty to computer fraud, admitting he used his home computer in several late-night raids to destroy administrative files in an Internal Revenue Service minicomputer.

William Vannest pleaded guilty in U.S. District Court to two misdemeanor counts under the 1984 federal statute protecting computers used by the federal government. Upon sentencing, scheduled for June 18, he faces up to one year in prison and a $100,000 fine for each count.

Vannest gained unauthorized access using the Zilog, Inc. minicomputer at the IRS' Consulting Services Branch in Baileys Crossroads, Va., on several occasions in February, March and April 1985, said David P. Geneson, assistant U.S. attorney. The prosecutor said that Vannest "cracked" files used by the IRS branch for testing commercial software products.

Vannest apparently obtained the telephone number for the system and its supervisor password — in this case, the word Zeus — when he placed a routine proposal for a firm trying to sell software to the IRS, Geneson said.

After an IRS systems administrator noticed that files in the Zilog computer had been destroyed, he installed a program to monitor the intrusions and routed the hacker's calls to duplicate files in a Zilog minicomputer at the IRS security office, the prosecutor said. To make certain that the invader knew he was destroying private IRS files, IRS officials added a computer screen warning "unauthorized access only," Geneson said, in order to meet the requirements of the statute.

Subsequently, the IRS

identified two more raids, one at 2:56 a.m. on April 9, another at 3:45 a.m. and 3:17 p.m. on April 11, 1985. The

telephone calls were traced to Vannest's residence, and he was later arrested, Geneson reported.

NEWS

CALENDAR

WEEK OF MAY 25

MAY 28-29, WASHINGTON, D.C. — Systems/34, 36 and 38 Users Show. Contact: Andrew Wahtera, The Producers, 360 Merrimack St., Lawrence, Mass. 01843.

MAY 28-30, WASHINGTON, D.C. — Stategic Data Planning and Modeling. Contact: Barnett Data Systems, 19 Orchard Way N., Rockville, Md. 20854.

MAY 29-30, SAN FRANCISCO — Unix In Focus. Contact: International Data Corp., 5 Speen St., 3350 W.

Bayshore Road, Palo Alto, Calif. 94303.

MAY 29-31, BLACKSBURG, VA. — Personal Computer Interfacing for Scientific Instrument Automation. Contact: Linda Leffel, Virginia Polytechnic Institute and State University, Blacksburg, Va. 24061.

MAY 30-JUNE 2, ATLANTA — Society of Telecommunications Consultants Spring Conference. Contact: STC Headquarters, Suite 1410, One Rockefeller Plaza, New York, N.Y. 10020.

WEEK OF JUNE 1

JUNE 2-5, DETROIT — Vision '86 — Applied Machine Vision Conference and Exposition. Contact: Vision '86 Public Relations, Machine Vision Association of the Society of

Manufacturing Engineers, P.O. Box 930, One SME Drive, Dearborn, Mich. 48121.

JUNE 2-5, NASSAU BAY, TEXAS — International Symposium on Ada Programming Language Applications for Space Station Development. Contact: University of Houston — Clear Lake, 2700 Bay Area Blvd., Houston, Texas 77058.

JUNE 2-6, BOSTON — Harmon Associates Seminars and Workshops. Contact: Harmon Associates, 151 Collingwood, San Francisco, Calif. 94114.

JUNE 4, SAN FRANCISCO — How to Build Your High Tech Career Network. Contact: Association for Women in Computing, Bay Area Chapter, Suite 44, 55 Sutter St., San Francisco, Calif. 94104.

JUNE 4-6, BOSTON — Engineering Expert Systems. Contact: Har-

mon Associates, 151 Collingwood, San Francisco, Calif. 94114.

JUNE 4-6, SAN DIEGO — 1986 National Educational Computing Conference. Contact: Susan M. Eglizynski, National Educational Computing Conference 1986, School of Education, University of San Diego, Alcala Park, San Diego, Calif. 92110.

JUNE 5-6, CLEVELAND — North Central Region Data Processing Trainer's Conference. Contact: Gary Livingston, Livingston & Associates, P.O. Box 30819, Cleveland, Ohio 44130.

JUNE 7, BEIJING — China-Diderta '86: The International Trade Fair for Educational Equipment. Contact: Swiss Industries Fair, Secretariat China Didacta '86, P.O. Box CH-4021, Basel, Switzerland.

WEEK OF JUNE 8

JUNE 8-11, NEW ORLEANS — Ethernet Decision-Makers Group Exchange Conference. Contact: EDGE International, Inc., Suite 260, 1539 N. China Lake Blvd., Ridgecrest, Calif. 93555.

JUNE 9-10, TEANECK, N.J. — Machover on Business Graphics. Contact: Carol Every, Industry Representative, Frost & Sullivan, Inc., 106 Fulton St., New York, N.Y. 10038.

JUNE 9-11, MYRTLE BEACH, S.C. — The Association of Small Computer Users in Education 19th Annual Summer Conference. Contact: Jack Cundiff, Horry-Georgetown Technical College, Conway, S.C. 29526.

JUNE 9-11, NORCROSS, GA. — Time and Motion Study Fundamentals. Contact: Institute of Industrial Engineers Registrar, 25 Technology Park/Atlanta, Norcross, Ga. 30092.

JUNE 9-12, BOSTON — Network Management/Technical Control Conference and Exposition. Contact: CW/Conference Management Group, 375 Cochituate Road, Framingham, Mass. 01701.

JUNE 9-12, CHICAGO — Com Close Spring, The Computer Leasing Conference and Expo. Contact: Show Management Offices, 3825-I S. George Mason Drive, Falls Church, Va. 22041.

JUNE 9-13, SAN DIEGO — MUMPS Users' Group 15th Annual Meeting. Contact: MUMPS Users' Group, Suite 510, 4321 Hartwick Road, College Park, Md. 20740.

JUNE 10-13, ATLANTA — Summer 1986 Data Conference and Exhibition. Contact: The Ummix Association Conference Office, P.O. Box 385, Sunset Beach, Calif. 90742.

JUNE 11, NEW YORK — The Semiconductor Industry — Its Changing Structure 1986. Contact: Robert Burton, L.F. Rothschild, Unterberg Towbin, 55 Water St., New York, N.Y. 10041.

JUNE 11-13, MAINZ, WEST GERMANY — International Tandem Users' Group 1986 Spring Conference. Contact: ITUG Headquarters, Suite 600, 111 E. Wacker Drive, Chicago, Ill. 60601.

JUNE 11-13, TEANECK, N.J. — Machover on CAD/CAM. Contact: Carol Every, Industry Representative, Frost & Sullivan, Inc., 106 Fulton St., New York, N.Y. 10038.

JUNE 13, DETROIT — James Martin Seminar — The End-User Revolution. Contact: Thomas J. Distler,

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CALENDAR from page 110

acquiro, Director of Education, Association for Systems Management, 24587 Bagley Road, Cleveland, Ohio 44138.

WEEK OF JUNE 15

JUNE 15-20, LONG BEACH, CALIF. — **1986 Government Management Information Sciences Conference.** Contact: Tom Lang, Assistant Chairman, Data Processing Department, 9150 E. Imperial Highway, Downey, Calif. 90242.

JUNE 16-18, UNIVERSAL CITY, CALIF. — **Synergy '86, Conference on Functional Interfacing for Computer-Integrated Manufacturing.** Contact: Society of Manufacturing Engineers, P.O. Box 930, One SME Drive, Dearborn, Mich. 48121.

JUNE 16-20, CAMBRIDGE, MASS. — **Managing Information Technology: New Responsibilities in a Changing Environment.** Contact: Center for Information Systems Research, Sloan School of Management, MIT, E40-193, 77 Massachusetts Ave., Cambridge, Mass. 02139.

JUNE 17-18, PLYMOUTH, MICH. — **Robotic End Effectors: Design and Applications-Seminar.** Contact: Mary Dombrowski, Special Programs Division, Robotics International of the Society of Manufacturing Engineers, One SME Drive, P.O. Box 930, Dearborn, Mich. 48121.

JUNE 17-19, ATLANTIC CITY — **Plan-Tech '86.** Contact: Delia Associates, P.O. Box 338, Delia Marketing Communications Center, Whitehouse, N.J. 08888.

JUNE 18-20, TOKYO — **Marketing Opportunities Seminar.** Contact:

Agnes M. Pavel, Program Director, U.S. Telecommunications Suppliers Association, Suite 1618, 333 N. Michigan Ave., Chicago, Ill. 60601.

WEEK OF JUNE 22

JUNE 22-27, PHILADELPHIA — **Management Information Systems for Strategic Advantage.** Contact: Office of Executive Education, 200 Vance Hall, The Wharton School of the University of Pennsylvania, Philadelphia, Pa. 19104.

JUNE 23-25, ALBUQUERQUE, N.M. — **Integrated Fiber-Optic Technology Training.** Contact: Linda Castle, Optoelectronic System Consultants, P.O. Box 35525, Albuquerque, N.M. 87176.

JUNE 23-25, MIAMI — **Electronic Data Processing Auditors Associ-**

ation 14th Annual International Conference. Contact: EDPAA, P.O. Box 88180, Carol Stream, Ill. 60188.

JUNE 23-26, BOSTON — **ATE East '86.** Contact: Registrar, Morgan-Grampian Expositions Group, 1050 Commonwealth Ave., Boston, Mass. 02215.

JUNE 23-27, AMSTERDAM — **Fourth Annual European Fiber-Optic Communications and Local-Area Networks Exposition.** Contact: Information Gatekeepers, 214 Harvard Ave., Boston, Mass. 03134.

JUNE 23-27, CHICAGO — **A/E/C Systems '86: The Computer and Management Show for the Design and Construction Industry.** Contact: Conference Director, A/E/C Systems '86, P.O. Box 11318, Newington, Conn. 06111.

JUNE 24-26, CHICAGO — **Structured Techniques Association III/Structured Techniques in the Eighties: Practice and Prospects.** Contact: Mary Anne Gabriel, Heller Financial Corp., 105 W. Adams St., Chicago, Ill. 60603.

JUNE 24-27, CHICAGO — **Autocad Expo '86.** Contact: William Ryan, Autocad Expo '86, Autodesk, Inc., 2320 Marinship Way, Sausalito, Calif. 94965.

JUNE 25-26, COATESVILLE, PA. — **Chester County Expo '86 CAD/CAM Conference from Micro to Mini.** Contact: Lee Smith, Central Chester County Vocational Technical School, 1635 E. Lincoln Highway, Coatesville, Pa. 19320.

WEEK OF JUNE 29

JULY 2-3, LAS VEGAS — **Fall Meeting of the Design Automation Standards Subcommittee.** Contact: Ron Waxman, Design Automation Standards Subcommittee Chairman, IBM FSD, 9500 Godwin Drive, Manassas, Va. 22110.

WEEK OF JULY 27

JULY 28-30, RENO, NEV. — **1986 Summer Computer Simulation Conference.** Contact: The Society for Computer Simulation, P.O. Box 17900, San Diego, Calif. 92117.

WEEK OF AUGUST 3

AUGUST 4-8, ANN ARBOR, MICH. — **Contemporary Data Communication Networks: Planning, Management and Computer-Based Design.** Contact: Engineering Summer Conferences, 300 Chrysler Center/N. Campus, Ann Arbor, Mich. 48109.

WEEK OF AUGUST 10

AUGUST 11-14, SNOWMASS, COLO. — **AM/FM International Ninth Annual Conference.** Contact: AM/FM International, Suite 320, 8775 E. Orchard Road, Englewood, Colo. 80111.

WEEK OF AUGUST 17

AUGUST 18-22, DALLAS — **Thirteenth Annual Conference on Computer Graphics and Interactive Techniques: SIGGRAPH '86.** Conference Management, Smith, Bucklin & Associates, Inc., 111 E. Wacker Drive, Chicago, Ill. 60601.

Watch what happens next time you ask a mainframe software vendor for a complete customer list.

COMPUTER INDUSTRY

Section begins on page 146

Paradyne anticipates stable year after tumultuous 1985

Hopes to come back from losses, layoffs, key fraud indictments

By James A. Martin

LARGO, Fla. — After a tumultuous year in which five company officers were indicted for fraud, revenues declined, losses were reported, layoffs occurred and takeover rumors buzzed, Paradyne Corp. is predicting a comparatively quiet year for fiscal 1986. But the data communications vendor's troubles are far from over.

There was both good and bad news from Paradyne recently. Net income for the first quarter ended March 31 was modest but rose to $875,000, compared with $161,000 a year earlier. But revenue was $66 million, down slightly from $68 million last year, and the company announced the closing of a manufacturing plant in Puerto Rico. Orders were up 20% over the same period in 1985, but shipments were down 12%.

"Therefore, the company is cautious about the outlook for the remainder of the year," says Robert S. Wiggins, Paradyne's president and chief executive officer, who was interviewed recently in his Largo office. "The software experienced by the industry in 1985 has not subsided. Management actions taken last year have resulted in lower operating expenses, and we will continue to maintain a tight control on spending."

The shutdown of the Puerto Rico operation, which opened in 1979 and employed 165 people, is expected to save the company $1 million this year and $3 million the next. Manufacturing operations are to be consolidated at Paradyne's Largo facilities.

As an additional austerity move, Paradyne will require that all U.S. nonhourly employees take one unpaid furlough day per month for the remainder of the year. Last July, the company laid off 150 of its 3,700 employees and implemented a series of unpaid furlough days.

But aside from its financial dilemma, one of Paradyne's most publicized problems at the moment is the 45-page indictment from a federal grand jury that accused the company, five current and three former officials and a former U.S. Social Security Administration officer of fraud.

The December 1985 indictments alleged that Wiggins and Vice-President George Pressly, among others, attempted to defraud the U.S. government in order to win a $115 million contract. Paradyne was awarded that contract, the largest ever awarded by the Social Security Administration, in 1981.

"The company regards the charges as outrageous and no lacking foundation as to be ludicrous," James Slattery, senior vice-president and general counsel for Paradyne, said at the time of the indictments.

In the meantime, Paradyne has been barred from bidding on any government contracts, and the case is scheduled to come to trial Sept. 8. However, Wiggins says the indictments and the government barring have had little impact on Paradyne.

"Obviously it affects our government activity, but that's never been very high, so it's not a major problem for us," Wiggins says. "Our customers primarily buy from us because we do a good job. A great deal of our business each year comes from our

installed base, and I don't believe our ability to do business with our customers has been affected at all."

Irwin Silverberg, a senior partner and analyst with Silberberg, Rosenthal and Co. in New York, agrees. "I don't think their customers believe them to be crooks," he says. "My guess is that their customers think Paradyne is being victimized by the government."

The task of steering Paradyne toward a significant profit, which Wiggins says should happen this year, is a formidable one. Part of that strategy is to reconsider strengths and weaknesses in existing product lines as well as recognize opportunities for new markets, both short and long term.

One area that has come under scrutiny is packet-switching devices. "We have been in that market for two years now, and we haven't seen a great deal of results from that," Wiggins says. "But we are going to continue in that market because we think there is potential for the long haul." Paradyne recently introduced its PDN 5290 family of packet-switching products at the Interface

'86 convention in Atlanta.

In the past, packet-switching was "normally associated with expensive networks, and they primarily handled asynchronous devices," Wiggins says.

"Today, the technology allows you to put in a network at a much lower cost with asynchronous and synchronous devices, with some nice attributes of being able to provide redundancy and combining multiple networks into one. So, it has all the advantages you would like in a data communications network, but for some reason the market just hasn't moved," Wiggins adds.

Paradyne also hopes to make a strong move into the T1 network market. The company has a technology and manufacturing license with Spectrum Digital Corp., a Herndon, Va., multiplexer vendor, for a third-generation T1 switching multiplexer line to be introduced later this year.

The emerging Integrated Services Digital Network (ISDN) standard is too premature at this point to become the focus of product development, Wiggins says. "I think a lot needs to be done before anyone totally understands ISDN and what effect it might have on the marketplace," he adds.

Despite the federal indictment, Paradyne's problems have been more "internal than external," according to analyst Silverberg.

Paradyne's Wiggins

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COMPUTER INDUSTRY

GTE, Fujitsu plan venture to develop, market PBX tools

Target North American mart

By Alan Alper

STAMFORD, Conn. — GTE Corp., as part of a continuing plan to forge key strategic alliances, recently reached a preliminary agreement to establish a joint venture with Fujitsu Ltd. to develop and market private branch exchanges (PBX) and related communications equipment in North America.

Under terms of a "memoranda of understanding," majority ownership of the company will be held by Fujitsu America, Inc., Fujitsu's North American peripherals and communications subsidiary, a GTE spokesman said.

A definitive agreement, which would specify financial terms and management arrangements, is expected to be worked out by year's end.

The new firm initially assume manufacturing and marketing of the Omni S1, S2 and S3 PBXs from GTE's Communications Systems' Business Systems division.

It would also develop new PBX products and perhaps market some of Fujitsu's existing communications products.

If formed, the joint venture would enable GTE to share development costs and combine technology with a leading electronics firm at a critical time in the extremely competitive PBX marketplace, the GTE spokesman said.

"It's difficult to keep up today," he said. "The investment required is much greater than in the 1960s or 1970s when the equipment was primarily electromechanical. PBXs are now specialized computers that sit on someone's desk, offering options like conference calling and speed dialing."

Earlier this year, GTE said it was forming two other joint ventures.

It is in the midst of melding its Sprint long-distance telephone service with a similar offering from United Telecommunications, Inc. and is attempting to combine its central office switch business into a joint venture with Siemens AG (see story below).

Siemens, GTE negotiations at standstill

By Beate Knease
Computerworld News Service

MUNICH — Siemens AG, Germany's leading electronics and telecommunications firm, and GTE Corp., the U.S. telecommunications firm, have not yet succeeded in working out details of their recently announced joint venture. Spokesmen for both firms refused to comment on the stalled negotiations.

> **"**
>
> *The firms are having trouble agreeing on which telephone switching system to distribute.*

The plan to establish a joint company for the development of communications equipment was announced in mid-January. Siemens hopes to sell its telephone switching systems to 15 GTE offices as part of the deal.

According to Sean White, president of New York-based market research firm Northern Business Information, Inc., the companies are having trouble agreeing on which telephone switching system to distribute through the joint venture. White also speculated that other sources of contention are disagreements over management of the firm and the question of whether to integrate the GTE production plant in Northlake, Ill.; into the new firm.

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aid of technical assistance? Well, join the crowd.

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COMPUTER INDUSTRY

Retail dealers turning Blue

down on the gray market — those sneaky unauthorized dealers that often steal high-volume corporate sales away from IBM's own direct sales force.

The freeze touched off a wave of consolidation in the retail channel that was al-

ready smarting from price competition on all fronts. Perhaps manufacturers of blue suits should step up production, since the computer retail channel is quickly beginning to look much like IBM itself.

This has not only given IBM more leverage over its dealers but is also helping to quicken the demise of the independent computer dealers whose business was once based upon personal service

and product knowledge.

Ironically, these moves coincide with IBM's departure from direct retailing with the recent sale of all 81 IBM Product Centers to Nynex Corp. IBM obviously feels that the best way it can use

its muscle in this channel is by keeping a tight rein on its resellers. But it is uncertain whether IBM can control Nynex, which may have competing interests vis-a-vis AT&T. One thing is certain — IBM authorization for Nynex will be no problem.

For the time being, the winners in the IBM retail game are clearly the major computer retail chains, particularly Businessland, Inc., which has been expanding at a rapid rate and recently

purchased two 36-store, company-owned chains within two weeks.

One loser in all this may or may not be Compaq. As IBM increases control over its dealers, it becomes much easier to squeeze the compatibles out of the dealer channel. But based on past performance, few expect Compaq to sit still, and industry sources report that the firm will introduce a sub-$1,000 machine as well as an Intel Corp. 80386-based machine by year's end, both of which are sure to keep it in the running.

Thrust No. 2

Thrust No. 2 in IBM's deepening control over the retail marketplace was made on April 2, with a slew of IBM announcements that may mark the beginning of the end for many add-on board makers.

It now costs a computer dealer the same amount to take a base IBM Personal Computer AT and build it up with hard disks and added memory as it does to buy an enhanced AT from IBM, making one of the dealers' favorite pastimes no longer profitable. In addition, the new IBM Personal Computer XT now comes with 256K bytes on the motherboard, which can be expanded to 640K bytes.

Already, third-party board makers are dramatically cutting prices to make their products attractive to users who haven't yet boosted memory, and some board makers, such as Tecmar, Inc., have begun laying off employees. And the bloodletting among hard disk drive makers may begin any time, if you listen to dealers.

IBM's efforts to control its dealers and squash third-party add-on firms has led to resurgence in speculation about IBM's next move, which could be in the area of microcomputer software.

Remaining compatible

At the April 2 series of announcements, IBM Entry Systems Division chieftain William Lowe warned that firms will have to work increasingly hard to remain compatible — which is just as much a warning to users that they should increasingly buy IBM to remain compatible. When 80386-based machines begin to take over, some analysts expect IBM to introduce several different machines, making compatibility a matter of guesswork.

The IBMification of the retail channel might create a significant barrier for those small firms hoping that innovation alone will get them space on retail shelves. With IBM and its handful of retail chains pulling the strings in the retail market place, it may be even more difficult for new or small firms to get heard.

COMPUTER INDUSTRY

NSC, Concurrent join forces

To introduce 32-bit supermini by 1989

By Tatushko Kondoh
Computerworld News Service

TOKYO — In their first move of its kind by a steel maker, Nippon Steel Corp. (NSC) has decided to enter the computer business by establishing a joint venture with Tinton Falls, N.J.-based Concurrent Computer Corp. in Japan this month. Under terms of the preliminary agreement, the firm, Concurrent-Nippon Corp., will introduce a 32-bit supermini computer in 1988 or 1989.

For the first years, the scope of op-erations at the firm, which is capital-ized at $1.5 million and will be head-ed by a Concurrent executive to be appointed later, will focus mainly on importing and marketing Concur-rent's 32-bit machines for the Japa-nese market, a spokesman said.

Concurrent will hold an estimated 60%, with NSC holding the remain-der. The cooperative company ex-pects $600,000 in sales in its third year of operation.

Japan's Dawa Securities Co., which coordinated the merger negoti-ations, said Concurrent's increased interest in the Japanese supermini market neshbed well with NSC's hope to diversify its business into elec-tronics.

European group to monitor U.S. investigations into Japanese trade

By Nicky Wilmore
Computerworld News Service

LONDON — European chip mak-ers took the first step toward stop-ping possible Japanese semiconduc-tor dumping by establishing a working group to monitor U.S. investigations into Japanese trade practices. Dumping duties have already been imposed on some Japa-nese semiconductor firms by the U.S., and U.S. government and senior trade officials are now holding exten-sive talks with the Japanese.

European industry officials ex-pressed concern that they do not have a voice in these talks. Europe is also anxious to block reported U.S. proposals to put a floor price on chip sales.

"It would just put more money into the hands of the Japanese and the U.S. companies as well," said the director general of the Electronic Components Industry Federation, a UK trade association. "It isn't satis-factory for the issue to be sorted out bilaterally. It needs to be done on a global basis."

The U.S. antidumping duties do not cover chips manufactured by Japanese firms in third-party coun-tries. Japanese companies are al-ready shifting production volume to Europe.

NEC Corp. announced plans earli-er this month to increase production in the UK, and Toshiba Corp. said it will increase production levels in West Germany by a factor of five. Its stated intention is to increase units produced each month from around 400,000 to about two million by July this year.

Japanese manufacturers already hold about 80% of the world chip market, valued at roughly $1 billion per year.

Committee bill revives tax credit

facturers Association, said the group's members are "glad to see that tax reform is on track." He called the committee bill a "major step toward a brighter future for high technology."

The next steps for the tax reform effort are consideration by the full Senate, where amendments to the Fi-nance Committee's bill are possible, and then an all-important conference between the Senate and the U.S. House of Representatives to negoti-ate compromises on the differing House and Senate tax packages.

From the industry's point of view, the Senate Finance Committee bill is an improvement over the House-passed bill, although industry lobby-ists privately grumbled that they still did not get a permanent extension of the R&D credits.

The House bill would extend the R&D credit for three years at the re-duced rate of 20% and cut the top corporate tax rate to 36%. Both the House and Senate committee bills would repeal the 10% investment tax credit, a move that would slightly raise the cost of buying or leasing computers and other equipment.

The Coalition for the Advance-ment of Industrial Technology, a group of high-tech firms and univer-sities supporting the R&D credit, praised the Senate Finance Commit-tee's bill on grounds that loss of the R&D credit would put U.S. firms at a competitive disadvantage.

"On a day-to-day basis, we must compete against foreign countries that are specifically encouraged by their governments," commented Jo-seph A. Saloom, chairman of the co-alition and an M/A-Com, Inc., execu-tive. "Japan, for example, has had an R&D tax credit since 1966," he said.

Warehouse sale boosts resale mart

By Peggy Watt

SANTA ANA, Calif. — A recent nine-day microcomputer garage sale drew more than 17,000 buyers for excess inventory from 450 Computerland Corp. stores across the country, encouraging aftermarket advocates to herald the place of resale in the computer industry.

Customers who snatched up about $20 million worth of equipment at the Microcomputer Inventory Exchange ranged from corporate computer managers to garage-sale-spirited hobbyists searching for spare parts to older systems. Prospective customers waited more than two hours to get into the sale, according to Fred Brown Associates of Santa Barbara, Calif., which coordinated the sale.

Brown, publisher of the 2-year-old "Brown Book" guide to used computer prices and a longtime advocate of the resale market, said he thinks the success of the sale underscores the need for a legitimate resale and inventory reduction market for high-tech equipment.

"People are realizing an industry within an industry in the aftermarket," Brown said. "Early buyers need to be able to move up, but they can't abandon their equity." Brown has built a business out of moving excess inventory for computer companies, having cut his teeth on the technique at the now-bankrupt original Osborne Computer Corp.

IBM and Compaq Computer Corp., however, refused to allow even some of their older products in the Computerland warehouse sale. The companies said the co-op sale was contrary to their dealer agreements. Apple Computer, Inc. allowed sale of only its older products that are no longer on the company's price list.

Japanese chip makers to develop SOR equipment

TOKYO — Japan's 13 largest semiconductor suppliers, including NEC Corp., Hitachi Ltd. and Fujitsu Ltd., have agreed to join hands in a $90 million, 10-year government project to develop synchrotron radiation (SOR)-generating equipment, needed to build next-generation semiconductor chips.

As an initial step, a joint R&D firm may be established in June. According to Japan's Ministry of International Trade and Industry (MITI), the ring-shaped SOR generator accelerates electrons and light at the same velocity.

MITI said that full availability of SOR systems will be a shortcut to the manufacturing of 16M-byte dynamic random-access memory chips, the devices 16 times more powerful than 1M-byte memories.

Entrepreneur charged with software piracy

By James A. Martin

TORONTO — In what is said to be one of the first cases of its kind in Canada, a Toronto entrepreneur faces a total of 10 criminal charges for allegedly reproducing and distributing illegal copies of microcomputer software programs.

During a recent hearing, Provincial Court Judge Fred White requested that four counts of theft be added to the list of charges already facing Terence Ram, a Toronto businessman who operated a company called TR Software.

Ram is accused of supplying customers with illegally reproduced software and instruction manuals for such programs as IBM's Displaywrite 2 and Quald Software Ltd.'s Copyright.

Ram faces 10 charges including fraud, theft and trademark forgery, according to a Toronto attorney, who asked not to be identified. TR Software allegedly sold the unauthorized software programs for as little as $9 and advertised its services regularly in Toronto newspaper classified ads and a catalog.

The charges cover the period of Feb. 11 to Sept. 18, 1985, at which time the Royal Canadian Mounted Police, acting on a tip, seized the property and assets of Ram's company. IBM and Quald, among other vendors, had received numerous calls for support from unregistered users and

relayed their concerns to Canadian authorities, the source said.

Because this case represents a "new type of prosecution," it will be difficult to estimate what penalties the defendant might receive if found guilty, the attorney said. "This is a very new kind of case in Canada, so it is hard to say how a court will consider the penalties."

David B. Sturtevant, senior director of public communications for ADAPSO in Arlington, Va., said it was the first software piracy case in Canada to come to the organization's attention. ADAPSO has been emphasizing stiffer penalties and more federal investigation and involvement in software piracy cases in the U.S.

COMPUTER INDUSTRY

Ashton-Tate settles NTS suit out of court, pays Safeguard $250,000

By Douglas Barney

TORRANCE, Calif. — In a recent out-of-court settlement, Ashton-Tate paid some $250,000 to Safeguard Business Systems, Inc., owner of National Training Systems Inc. (NTS), a firm cofounded by Ronald S. Posner, Ashton-Tate's current executive vice-president of sales and international marketing.

NTS was hired by Ashton-Tate to develop training manuals and sales aids for Ashton-Tate's Framework and Dbase software packages. Ashton-Tate refused to pay for the work, claiming it was substandard, prompting NTS to sue for breach of contract.

"I don't think any of it was actually used," said Stanley Witkow, attorney for Ashton-Tate. Safeguard's attorney, Thomas Schneider, was unsure whether Ashton-Tate used any of NTS' goods or services.

While NTS developed the products, from the fall of 1983 through the summer of 1984, Posner was still with NTS. "At the time the work was being done, he was an employee of NTS, and at the time the suit was being litigated, he was with Ashton-Tate. That sort of put him in an unusual position," Schneider said.

Posner was unavailable for comment.

Zilog to make AT&T chip

Firm picked as alternate vendor of 32-bit chip set

BERKELEY HEIGHTS, N.J. — AT&T last week designated Zilog, Inc. as the first alternate source vendor for its 32-bit Unix chip set, the WE32100.

Zilog, which uses the AT&T chip as the microprocessor in its own 32-bit supermicrocomputer, will manufacture the WE32100 for five years. The Campbell, Calif., semiconductor vendor also has the option to develop and market new products based on AT&T technology and license them to AT&T. The Zilog-made WE32100

chips will carry the Zilog label and will be marketed by Zilog's direct sales force.

John M. Nemecek, AT&T's executive vice-president of components and electrical systems, said the agreement came in response to customer demand. "Our customers told us they wanted the assurance of an alternate source of supply as a demonstration of our commitment to this marketplace," he said.

Zilog, developer of the pioneering 8-bit Z80 microprocessor, is a wholly owned subsidiary of Exxon Corp. Founded in 1975, Zilog was not profitable until 1984 and last year laid off approximately 400 of its 2,100 employees.

Hitachi, Fujitsu profits to decline

By Takahisa Kondoh
Computerworld News Service

TOKYO — Hitachi Ltd and Fujitsu Ltd. are expected to report sharp declines in profits for the last fiscal year, blaming the semiconductor industry's recession and the Japanese yen's seemingly incessant surge in value against the U.S. dollar.

Like many Japanese companies closing their fiscal years in March, Hitachi and Fujitsu have yet to issue final financial statements for 1985. However, at Fujitsu, profits reportedly may shrink more than 60% from the year before to around $250 million on revenue of $8.9 billion, up about 10% from 1984 levels.

Fujitsu expects to announce that sales of computers reached roughly

$6.26 billion, up 18% from the year before. The company, meanwhile, predicts a 25% growth in sales of communications gear, while the company's memory products line will suffer an estimated 25% drop to sales of $1.2 billion.

Echoing Fujitsu's story, Hitachi cited the erratic fluctuations in yen-dollar exchanges and the semiconductor slump as primary reasons for its gloomy forecast of a 40% profit decline for fiscal 1985.

Hitachi forecasts 1985 profits of $1 billion on revenue of $18.7 billion, up just 1% from a year ago. The semiconductor division is expected to earn $2.7 billion, down from 1984's $3.4 billion.

Hitachi said that despite a rapid recovery in chip sales, market prices are far from restored to healthy levels.

According to one company official, a 256K-byte dynamic random-access memory chip now sells for an average price of $2.10 in the U.S. versus the average price of $22 at the end of 1984.

The bullish Japanese currency against the U.S. dollar is also expected to reduce Matsushita Electric Industrial Co.'s profit by some 25% during the current financial term, which ends in November.

COMPUTER INDUSTRY

■■ **MERGERS AND**
■■ **ACQUISITIONS**

Data communications vendor Avatar Technologies, Inc. of Hopkinton, Mass., recently acquired Matrix Communications, Inc. of Marblehead, Mass., for an undisclosed sum. In addition to its protocol converters, micro-to-mainframe links and other communications products, Avatar will now market as the Avatar Alliance Matrix's sole product, the entry-level Alliance local-area network.

Matrix introduced the Alliance last fall and installed the network at some beta-test sites, but needed some financial help to market the product.

■

The **Standard Register Co.** and **Burroughs Corp.** have entered into an agreement whereby Standard Register will purchase the assets and operations of the **U.S. Business Forms Division** of the **Office and Media Products Group** of Burroughs.

The purchase agreement provides for change of ownership on June 1. The boards of directors of both companies have approved the transaction. The purchase price is in excess of $100 million.

■

National Business Systems, Inc. has reported that **Transact Data Services, Inc.**, an affiliated company, has completed the purchase of all of the outstanding shares of **MSS/DP, Inc.**, a Toronto-based data processing consulting and software development firm. Terms of the purchase agreement were not disclosed.

■

Decision Data Computer Corp. announced the acquisition of **Panatec**, a computer software and operating system developer based in Garden Grove, Calif.

Decision Data purchased Panatec in order to support the company's strategy of developing advanced computer products and vertical market applications software. Panatec is composed of a systems software group, a customer software group and a robotic systems group.

Decision Data also announced the acquisition of the **Beverage Systems Division of Endata, Inc.** of Nashville.

The acquired business will become **Decision Beverage Systems Corp.**, a wholly owned subsidiary of Decision Data to be headquartered in Charlotte, N.C.

Decision Data purchased the operation to expand its position in the IBM System/34, 36 and 38 software market. Endata's Beverage Systems division supplies turnkey systems and software for the U.S. wholesale beverage industry.

■

Softech, Inc. of Waltham, Mass., has acquired **AMG Associates, Inc.** of Arlington, Va., in a stock purchase transaction. AMG Associates is a leading designer of custom software systems and related applications for automatic test equipment, a major component in the production and readiness of government and industrial systems. AMG Associates reported revenue of $3.4 million in calendar year 1985.

■

Issco announced an agreement in principle to acquire an initial 60% interest, with an option to acquire an

additional 31%, in **Mimer Information Systems AB**, a Swedish developer and marketer of integrated relational data base software.

The agreement grants Issco exclusive rights to market Mimer products in North America, U.S. territories and Pacific Basin countries. Mimer will remain a separate company and continue its software development and European marketing under President Sven G. Johansson, a company founder.

■

Continental Telecom, Inc. (Contel) announced that **American Satellite Co.**, a Contel unit, has signed a definitive agreement to acquire the **Western Union Telegraph Co.'s Government Systems Division**.

The transaction, valued at $156 million, includes certain transmission, maintenance and administra-

tive services to be provided by Western Union to American Satellite following the closing.

■

Nynex Corp. has announced it has acquired **Telco Research Corp.**, which develops and markets integrated software products and services designed for telecommunications and information systems managers to manage their telecommunications resources. Terms of the acquisition were not disclosed.

■

Pactel Communications Cos. reported that two of its subsidiaries, **Pactel Communications Systems** and **Pactel Infosystems**, have been consolidated into one company. The newly integrated company is a subsidiary of **Pacific Telesis Group**, the telecommunications holding company based in San Francisco.

Pactel Communications Systems of Walnut Creek, Calif., sells, installs and services telecommunications and computer hardware products to major companies.

Pactel Infosystems, based in San Leandro, Calif., markets business telephone and microcomputer systems through direct sales, telemarketing and retail centers.

■

Hale Systems, Inc. has completed the previously announced sale of substantially all of the assets of its subsidiary, **Bauldine, Inc.** of Phoenix, to **Security Pacific Information Systems, Inc.**, a subsidiary of **Security Pacific Corp.**

Hale Systems develops and markets specialized computer services, data bases and software products and systems primarily to financial and investment services industries.

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Foreign Editorial/ Sales Offices

Argentina: Ruben Argento, Computerworld Argentina, Av. Belgrano 406-Piso 9, CP 1092 Buenos Aires. Phone: 34-5563/5584. Telex: 22644.

Asia: Euan Barty, Asia Computerworld Communications Ltd., 701-4 Kam Chung Bldg, 54 Jaffe Road, Wanchai, Hong Kong. Phone: (05) 8L63238. Telex: 72827 (CDMHR HX)

Australia: Alan Power, Computerworld Pty Ltd., 37-43 Alexander Street, Crows Nest, NSW 2065. Phone: (02) 4395133. Telex: AA74752 (CW WOR).

Austria: Dr. Manfred Weiss, CW Publikationen, Verlagsgesellschaft m.B.H., Josefstadter Strasse 74, A-1080 Wien, Austria. Telex: 115 542 (adv) 40.

Brazil: Eric Hippeau, Computerworld do Brasil, Rua Pedroso de Morais 1553, 05419 Sao Paulo, SP Brazil. Phone: 814-9658-212-8750. Telex: 11 23017 (WORD).

Denmark: Preben Engel, Computerworld/ Danmark A/S, Tavnegade 52, 1400 Copenhagen 4, Denmark. Phone: (01) 955 695. Telex: 31566.

France: Axel LeBlois, Computerworld Communications S.A., 185 Avenue Charles De Gaulle, 92200 Neuilly Sur Seine, France. Phone: 747 1272. Telex: 613234 F.

Hungary: Dezso Futasz, SZT Computerworld, P.O. Box 386, Budapest, 1536, Hungary.

Italy: Daniele Comboni, Computer Publishing Group S.R.L., Viale Restelli 5, 20124 Milano. Phone: (2) 668 9773. Telex: 333436 (SEJT).

Japan: Mr. Shuji Mizoguchi, Computerworld Japan, 7-4 Shirokm 1-chome Chuo-ku, Tokyo 104. Phone: (03) 551-3862. Telex: 252-4217 (Computerworld Japan only).

Korea: Steven Yamada, Tokyo Representative Corp., Sanshin Hagio Bldg., 2-10 Kanda Jimbocho-4F, Chiyoda-ku, Tokyo 101, Japan. Phone: 230-4117. Telex: J26860 (reps for all CWCI publications except Computerworld Japan).

Mexico: Henry Morales, Computerworld Mexico S.A. de C.V., Oaxaca 21-2, Mexico City 7 D.F. Colonia Roma, 06700 Mexico. Phone: (05) 514-4218. Telex: 177 1300 (ACHAME).

The Netherlands: Wout Bensdorp, CW Communications B.V., van Eeghenstraat 84, 1071 GR

Amsterdam, The Netherlands. Phone: (020) 64 6851. Telex: 18242 (CWCOM NL).

Norway: Mr. Morton Hansen, CW Norge A/S, Hovinveien 43, P.O. Box 3862. Oslo, 0608 Oslo 6, Norway. Phone: (20) 64 77 25. Telex: 78476 9 (CW NOR N).

People's Republic of China: Chen Mingkun, China Computerworld, 74 Lu Gu Gun Road, P.O. Box 750, Beijing 10038. People's Republic of China. Phone: (47) 814 6174 Telex: 222214 (CCW CN).

Spain: Neil Kelley, Computerworld/Espana, Barquillo 21-3 Izda, Madrid-4, Spain. Phone: 231 23 85; 231 23 86; 231 23 88. Telex: 47894 (CW E).

Sweden: CW Communications AB, Sodra Hamnvagen 22, S-115 41 Stockholm, Sweden. Phone: 46 8 67 91 80. Telex: 14904 9 (HO-VACW).

Switzerland: Germann Ostenrieder, CW Publikationen AG, Witkonerstrasse No. 15, CH - 8032 Zurich, Switzerland. Phone: (01) 55 10 77. Telex: 816710.

Taiwan: Grace Tang, ACE Media Agency Ltd., Room 503, I., P.u Hsin 9, Road, Sec. 1. Taipei, 10587, Taiwan. R.O.C. Phone: 751 3636. Telex: 14142 (ACE GROUP). (Representative for all CWCI publications).

United Kingdom: Martin Durham, CW Communications Ltd., 99 Grays Inn Rd., London, WC1 8UT, United Kingdom. Phone: (01) 831-9252. Telex: 262346.

West Germany: Eckhard Utpadel, CW Publikationen GmbH, Rheinstrasse 28, 8000 Munich 40. West Germany. Phone: 72-76-30.

Venezuela: Guzman von Vigna Nagy, CW Communicaciones, C.R.L. Torre Maracaibo, Piso 10, Oficina H., Av. Libertador, Caracas, Venezuela. Phone: 72-76-30.

West Germany: Eckhard Utpadel, CW Publikationen GmbH, Friedrichstrasse 31, 8000 Munchen 40, West Germany. Phone: (089) 38172-0. Telex: 5215350.

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COMPUTER INDUSTRY

MAI Basic Four files IPO

MAI Basic Four, Inc. announced its initial public offering (IPO) last week of five million share— with a value between $85 million and $100 million. The firm will issue four million shares, and current stockholders will sell an additional million. MAI Basic Four announced earnings of $4.1 million on revenue of $70.8 million for the quarter ended March 31, its fourth consecutive profitable quarter. A year ago, the company lost $1 million on sales of $38.2 million in two months after commencing operations Jan. 28, 1985.

The supermini and supermicro vendor grew out of the former Basic Four Information Systems Division of Management Assistance, Inc. after the latter was split up and sold by arbitrageur Asher B. Edelman.

■

Computer Associates International, Inc. announced a 45% revenue increase and a 42% profit gain for the fiscal year ended March 31. The Garden City, N.Y., software vendor earned $33.5 million, or 83 cents per share, on sales of $191 million. For the fourth quarter, revenue increased 55% from year-earlier levels to $57.6 million, and profits were up 48% to $5.3 million, or 22 cents per share.

■

Two Dallas-based software houses, **Uccel Corp.** and **Sterling Software, Inc.,** reported strong earnings for the quarter ended March 31. On revenue of $37.6 million, Uccel earned $2.6 million, or 16 cents per share, including 3 cents per share from a one-time capitalization of software development expense. A year earlier, Uccel earned $1.5 million from continuing operations on sales of $31.9 million.

Sterling Software earned $1.9

million, or 17 cents per share, on revenue of $58.8 million. In the year-earlier quarter, the firm reported a profit of $629,000, or 13 cents per share, prior to the acquisition of Informatics General Corp.

■

Hewlett-Packard Co. has restored full-time, full-pay conditions to most of its employees, but it is implementing a hiring reduction throughout the company. Since two days per month of unpaid vacations and a 10% pay cut were implemented last August, about 40% of the employees have gone back to full pay and full-time work.

Orders at HP remain under pressure, however. "Our order rate, while it isn't all that bad, isn't all that good," a company spokesman said.

■

Workstation manufacturer **Counterpoint Computers,** Inc. of San Jose, Calif., laid off nine of its 94 employees earlier this month. The start-up company, which attracted national interest after it raised $20 million in venture capital and signed a strategic alliance with **AT&T Information Systems,** plans to take its manufacturing facilities out of house.

■

In an ironic twist of events, New Hampshire attorney Thomas K. Cruto, who gained fame successfully litigating against vendors including **MDS Qantel,** Inc., last week was named president and chief operating officer of MDS Qantel. Cruto was named to the board of directors of the Hayward, Calif., minicomputer vendor last year. MDS Qantel is the only remaining unit of Mohawk Data Sciences Corp. after its recent sale of assets.

New products, confidence, strong quarter boost Tandem

ACTIVE ISSUES
Kathy Porteus

No one can fault the recent stock performance of Tandem Computers, Inc. (TNDM — 31¾). A combination of well-received new products, increased confidence in the company's financial management and surprisingly strong results for the second fiscal quarter ended March 31 have propelled Tandem's stock price up 40% since early April.

Analysts adjusted their earnings estimates after Tandem posted second-quarter earnings of 29 cents a share, when most were expecting per-share earnings of 20 to 22 cents.

Frederic H. Cohen, analyst with L. F. Rothschild, Unterberg Towbin, changed his estimates to $1.35 a share for fiscal 1986 ending Sept. 30 and $1.85 a share for next year. David Wu, analyst with S. G. Warburg, Rowe & Pitman, Akroyd of San Francisco, raised his fiscal 1986 earnings estimate to $1.30 a share and fiscal 1987 estimate to $1.75 a share. Such adjustments reflect "basic improvements in Tandem's management," Wu says.

"There was a time," Cohen says, "when Tandem was not considered serious in terms of product development." But in mid-April, Tandem introduced its high-end system, the Nonstop VLX, which reportedly delivers about twice the performance of the older Nonstop TXP at two-thirds the cost per transaction. Cohen says the "VLX came right on schedule, underscoring management's much-improved controls over product design and production."

Porteus is president of Strand Research Associates, a Centerville, Mass.-based company that provides customized research services for financial and high-tech firms.

Tandem's near-term stock performance will likely be determined by what investors anticipate the company's prospects are for fiscal 1987.

Some analysts say that Tandem's prospects in its next fiscal year are essentially tied to the timing of a turn in the U.S. computer industry. Currently, domestic sales for Tandem, as well as for most other computer companies, remain weak.

"But Tandem's U.S. sales didn't fall off [in the second quarter] as had been expected," Cohen argues, "suggesting strong demand for the company's product line. Like Digital Equipment Corp., Tandem has the momentum of a very powerful product cycle working in its favor."

Donald Habacic, vice-president of research at Smith Barney, Harris Upham & Co., says, "Tandem's international business may be able to make up for much of the domestic weakness this year, especially with the currency translation factor." His foreign operations provided 40% of second-quarter revenue.

According to Warburg's Wu, the company's sales in the UK are especially strong this year because brokerage firms, anticipating deregulation of the London Stock Exchange, are buying more computers. Since such a sales boom may not recur next year, Wu expects Tandem's European sales to contribute less to total revenue in 1987. If next year's domestic sales increase by more than 10%, Wu says, then Tandem's net revenue growth should be about the same as this year's.

Based on this scenario and the likelihood of increased competition, Wu says he does not think there is much of an up side to Tandem's stock price. To be a buyer at these levels, "you have to believe the company can earn $2 a share in 1987," Wu says. Another analyst maintains Tandem is already too expensive.

But Rothschild's Cohen continues recommending Tandem on the potential to reach 50 within the next 12 to 18 months, assuming "the stock market doesn't peter out."

IBM partnership a boon to Hogan

Carpenter said.

Pretax losses ran up to $13.8 million in 1985 and $6.9 million in fiscal 1986, which ended March 31. Revenue dropped from a high of $36 million in 1984 to $28.8 million in 1985 and $27 million in 1986.

Carpenter said Hogan has repaired its integrated loan package, which consists of commercial loan, consumer loan and mortgage lending systems. But he said Hogan's credibility problems are "still lingering. That's where the agreement with IBM will help."

One major Hogan competitor, Uccel Corp. of Dallas, does not feel threatened by the pairing of Hogan and IBM. "Over the last four months, we have gone head to head against Hogan four times and sold our products to all four clients," said Donald L. Steele, vice-president and general manager of the Financial Systems Division of Uccel. "We look forward to meeting them in the marketplace."

IBM will have the first right of re-

fusal on future Hogan products. Campbell said, and will provide the front line of support: installation and telephone hot-line service. Hogan will provide the backup diagnostic support and will send a technician to the site when one is needed, he said.

Hogan is noted for selling software to 140 large banks worldwide. It typically boasts that it sells only to institutions with $1 billion or more in assets.

At least one industry follower, however, was puzzled by the matchup. "It is rather curious," said Rick Sherlund of Goldman Sachs & Co. "Marshall & Isley Corp. has IMS-based products. Why doesn't IBM sell that product line?" Sherlund said Hogan produces large applications that "are not very considerate of machine cycles, even though they are technically advanced."

The company is known to be working on a product called Financial Information System, which some analysts think Hogan hopes to sell to smaller institutions. But Uccel's Steele says the joint agreement with IBM has added to the complexity of Hogan's situation, with IBM selling packages and Hogan supporting them. "It's not as smooth as one organization doing both," he said.

IBM names distribution president Goldberg to top marketing slot

ARMONK, N.Y. — Victor J. Goldberg, former president of IBM's National Distribution Division, was appointed the top marketing executive of the Information Systems Group in a number of promotions announced last week.

An assistant group executive for marketing, Goldberg will be responsible for the customer sector organization, IBM's direct sales channel in the U.S. He formerly headed the product/reseller channel for microcomputers and related products.

Replacing Goldberg as head of the distribution division is Ned C. Lautenbach, former assistant group executive for plans and controls of the Information Systems and Communi-

cations Group. Lautenbach is the brother of Communications Products Division President Terry R. Lautenbach.

Additional promotions

IBM also announced the promotion of Vice-President Patrick A. Toole to group executive of the Information Systems Technology Group, replacing the late John E. Bertram, who died last month.
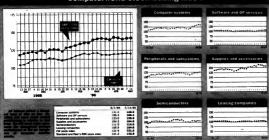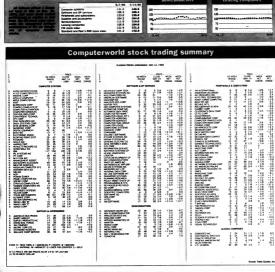
This technology division develops and manufactures IBM's semiconductors, as well as some intermediate processors and printers.

Toole had been the unit's assistant group executive in charge of development and manufacturing.

COMPUTER INDUSTRY

Computerworld stock trading index

Computer systems

Software and DP services

Peripherals and subsystems

Supplies and accessories

Semiconductors

Leasing companies

	5/7/86	5/14/86
Computer systems	131.0	135.9
Software and DP services	196.2	186.4
Peripherals and subsystems	110.0	114.3
Supplies and accessories	154.2	156.8
Semiconductors	111.9	113.8
Leasing companies	80.8	88.8
CW stock index	131.9	135.8
Standard and Poor's 500 stock index	141.2	143.8

Computerworld stock trading summary

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(1) TO NEAREST DOLLAR

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COMPUTER INDUSTRY

IBM partnership a boon to trouble-plagued Hogan

'Ironclad' agreement may alter banking software mart

By Charles Babcock

DALLAS — IBM's landmark OEM agreement to market Hogan Systems, Inc.'s financial applications [CW, May 12] not only delivers a much-needed boost to problem-plagued Hogan but could significantly alter the shape of the banking software market.

Industry analysts called the 20-year pact "the most ironclad" agreement IBM has entered into for a product line from a major vendor of vertical market applications. Observers said the combination of the IBM name and sales force could be enough to put Hogan's competitors under severe pressure.

In addition to increased sales, Hogan can look forward to an increasing stream of maintenance revenues. Hogan can cut advertising costs and continue development efforts, while a larger sales volume might prompt IBM to cut prices. "We were looking for ways to dramatically increase sales to produce additional revenues and provide financial stability," said Donald Campbell, Hogan's vice-president for marketing.

Under the agreement, Hogan will phase out its 14-member direct sales force as IBM assumes exclusive rights to market Hogan products under the IBM label in the U.S. and Canada. IBM is expected to mount a direct sales force at least three times larger than Hogan's, which will give Hogan software access to banking markets nationwide.

"You could argue that the Hogan sales force wasn't large enough to cover all the markets in the country," said Cato D. Carpenter, software analyst with Alex Brown & Sons.

Although additional competition is expected to emerge when Cullinet Software, Inc. brings out its anticipated financial applications, Carpenter thinks Hogan may repair its tarnished reputation and stay a step ahead of the competition.

The agreement comes as a boon to Hogan at a time when it is still reporting quarterly losses as a result of its disastrous installation of a malfunctioning loan application package in 1985. Sales plummeted, Hogan's Chief Executive Officer Richard Streller resigned, and 60 major financial institutions had to do without an integrated loan package they had been counting on as Hogan regrouped.

"In effect, Hogan recalled the product,"

Senate committee-approved bill would revive 25% R&D tax credit

By Mitch Betts

WASHINGTON, D.C. — The computer industry is counting itself as one of the winners in the continuing tax reform struggle in the U.S. Congress. The Senate Finance Committee recently approved a bill that sharply cuts the top corporate tax rate and revives the 25% tax credit for research and development, two features that the industry has strongly supported.

However, small high-technology firms that depend on venture capital were considered losers. Assuming it passes the full Congress, the committee's bill would raise the capital gains tax rate to 27% from the current 20%, a far cry from the rate reduction sought by the American Electronics

Association and others representing small firms.

Just when it appeared that tax reform was dying, the Senate committee emerged with a bill that cuts corporate tax rates in return for killing many tax credits and deductions. In this climate, the industry won approval for a four-year extension of the 25% R&D credit, which expired at the end of 1985.

Industry lobbying groups praised the committee's decision to retain the R&D credit and to slash the top corporate tax rate to 33% from the current 46%.

Ted A. Heydinger, vice-president of the Computer and Business Equipment Manufacturers

WHAT POLAROID DID FOR FILM
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